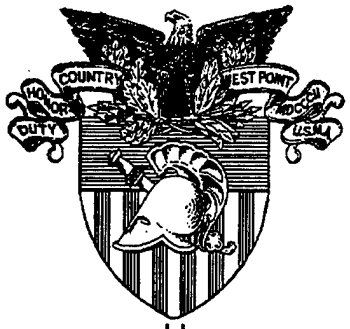

United States Military Academy
West Point, New York 10996

U.S. Army Materiel Command Resource Allocation Model (RAM)

OPERATIONS RESEARCH CENTER TECHNICAL REPORT 95-1

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March 1995

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THE U.S ARMY MATERIEL COMMAND (AMC), A MAJOR COMMAND (MACOM) OF THE UNITED STATES ARMY HEADQUARTERED IN ALEXANDRIA, VA, IS RESPONSIBLE FOR ALLOCATING CONGRESSIONALLY APPROPRIATED FUNDS FROM THE OPERATIONS AND MAINTENANCE, ARMY (OMA) ACCOUNT TO ITS MAJOR SUBORDINATE COMMANDS (MSC). AS OF JUNE 1994, THE ARMY MATERIEL COMMAND INCLUDED 30 MAJOR SUBORDINATE COMMANDS (MSC's) AND SEPARATE REPORTING ACTIVITIES (SRA's) SUPPORTED BY A WORKFORCE OF APPROXIMATELY 1400 OFFICERS, 6200 ENLISTED SOLDIERS AND 88,000 CIVILIANS. ONE OF AMC's MAJOR RESPONSIBILITIES IS TO ENSURE THAT EACH OF THE MSC's IS ADEQUATELY FUNDED WITH OMA DOLLARS TO MEET ITS OPERATING AND MAINTENANCE REQUIREMENTS THROUGHOUT THE FISCAL YEAR. AMC's DEPUTY CHIEF OF STAFF FOR RESOURCE MANAGEMENT (DCSRM) IS RESPONSIBLE FOR ALLOCATING OMA DOLLARS, AMONG OTHER RESOURCES, TO THE MAJOR SUBORDINATE COMMANDS.

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U.S. ARMY MATERIEL COMMAND RESOURCE ALLOCATION MODEL (RAM)

A TECHNICAL REPORT

of the

OPERATIONS RESEARCH CENTER
UNITED STATES MILITARY ACADEMY

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March 1995

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1. INTRODUCTION

The U.S. Army Materiel Command (AMC), a Major Command (MACOM) of the United States Army headquartered at Alexandria, Virginia, is responsible for allocating Congressionally appropriated funds from the Operations and Maintenance, Army (OMA) account to its Major Subordinate Commands (MSC). As of June 1994, the Army Materiel Command included thirty Major Subordinate Commands (MSC's) and Separate Reporting Activities (SRA's) supported by a workforce of approximately 1400 officers, 6200 enlisted soldiers and 88,000 civilians ([2],[8]). One of AMC's major responsibilities is to ensure that each of the MSC's is adequately funded with OMA dollars to meet its operating and maintenance requirements throughout the fiscal year. AMC's Deputy Chief of Staff for Resource Management (DCSRM) is responsible for allocating OMA dollars, among other resources, to the Major Subordinate Commands ([1],[2]).

1.1. Background

In practice, AMC allocates OMA dollars to the MSCs based on semi-annual forecasts for OMA dollars using a model, implemented in Dbase III, developed and maintained by the U.S. Army Material Command Management Engineering Agency (MEA) located at Huntsville, Alabama. Unfortunately, there are several shortcomings with the model currently being used by MEA to forecast the requirements of AMC's OMA dollars to the MSCs. First, MEA's forecasting model is highly dependent upon current operational data. Updating the model's data base is an intensive, tedious and time

consuming task. In general, a two week lead-time is required for updating and running the model. Second, the model parameters are based on "steady-state" operating conditions. The model does not currently support quick-turn-around "what if" analysis of alternative scenarios that vary from the steady-state operating conditions. Third, the model generates a formidable amount of data that requires substantial post-processing to transform it into usable information that supports the decision making process ([8],[9]).

1.2. Preliminary and Related Work

In 1992, the Operations Research Center (ORCEN) was asked by AMC to undertake the development of a fully automated executive-level *Resource Allocation Model*, henceforth referred to as RAM, for (1) quickly estimating OMA dollar requirements based on mission workload and (2) performing sensitivity analysis on alternatives for reallocating AMC's OMA dollars to its Major Subordinate Commands. The development of RAM was based, in part, on preliminary work by then CPT James Cummings. While assigned to the ORCEN, CPT Cummings built a similar decision support model called *Pro Forma* for the Army Budget Office (ABO)[3]. Pro Forma was designed to analyze resource allocation issues for the ABO that were somewhat related to the OMA dollar forecasting problem confronting AMC at the time.

Initial research efforts by members of the ORCEN team focused on understanding the decision analysis needs of executive level decision makers and studying the methodology used by the Management Engineering Agency to forecast

AMC's OMA dollars. Interviews with potential RAM model users (see Appendix C) proved very helpful in identifying the baseline requirements for the RAM.

Each year, AMC allocates OMA dollars to special operations and maintenance (O & M) accounts called *Program Elements* (PE). Program Elements are designated by a six digit code that identifies the type of work to be accomplished (called a *mission*) by AMC's Major Subordinate Commands. There are two types of Program Elements: (1) those based on a mission workload and (2) those not workload-based (i.e., non-workload-based). Workload is a measurement of the level of work to accomplish a Program Element mission during a given year. For example, the workload for PE 421010.a measures the number of short tons hauled during the year [4]. Table 1 (see below) lists workload-based Program Element codes and the corresponding Program Element missions.

PE Code	Program Element Mission	PE Code	Program Element Mission
421010.a	Move Short Tons	422121.3b	Field Provisional/New Major Items
421010.b	Move Watercraft	423005	Disposal Actions
421010.c	Fly Aircraft	423012.b	Demilitarize Weapons
421010.d	Ship Aircraft	423611	Auth population (Active and Contract)
422120.a	Ship/Receive Major End Items	423612.a	Auth population (Active and Contract)
422120.b	Ship/Receive Ammunition	423612.b	Millions of instruction per second used
422120.c	Renovate Ammunition	423806	Project Manager Acquisition Support
422121.1a	Process Requisition	423829.a	Manage Project Offices
422121.1b	Manage Pacing Items	423829.b	Support for Major Items
422121.1c	Manage End Items	423892	Support for Military Population
422121.2a	Let Contracts ($25K or less)	424041.a	Ship/Receive Short Ton Ammunition
422121.2b	Let Contracts (over $25K)	424041.b	Store Short Ton Ammunition
422121.3a	Field Active Major Items	424041.c	Renovate Short Ton Ammunition

Table 1. Workload-based Program Element Codes and Missions

Non-workload-based Program Elements are those for which the metrics for measuring workload are either difficult to define or do not exist. One example of a non-workload-based Program Element is PE 423012.a; Value of Logistics Management [4].

The first step in forecasting OMA dollar requirements of the MSC's is to pre-compute certain cost factors required for estimating Program Element workload data at each of the MSC's. Table 2 lists the cost factors for FY94 Program Elements of the five MSC's used in this study[1]. Currently, Program Element cost factors are determined by dividing the total base-year OMA dollars by the PE workload for the base-year t, where workload is expressed in units according to the type of Program Element mission accomplished. These cost factors, estimated from historical data, are used to forecast the OMA dollars required to accomplish a PE mission in year t+1. The workload for each Program Element is forecasted for year t+1 by multiplying the workload for each Program Element in year t by a productivity index to yield a forecasted workload for year t+1 [9]. This procedure is repeated for each workload-based PE. The next step is to estimate the OMA dollars needed to meet the forecasted workloads in t+1 for each PE. This is accomplished by multiplying the forecasted workload and the appropriate pre-computed PE cost factor (see Table 2). Again, this calculation is performed for all workload-based Program Elements. The total forecasted OMA dollars required for all workload-based PE's is the sum of the forecasted OMA dollars for each workload-based PE in year t+1 multiplied by an inflation index for year t+1.

[1] Cost factors were determined using the same mathematical method used in the resource allocation model developed AMCMEA.

IOCOM	ATCOM	CECOM	MICOM	TACOM	PE Code [2]
$0.00	$500.00	$87.60	$202.20	$43.40	421010.a
$0.00	$14,285.70	$0.00	$0.00	$0.00	421010.b
$0.00	$2,166.70	$0.00	$0.00	$0.00	421010.c
$0.00	$1,500.00	$0.00	$0.00	$0.00	421010.d
$0.00	$43.60	$6.10	$38.40	$13.20	422120.a
$0.00	$0.00	$0.00	$123.50	$0.00	422120.b
$0.00	$0.00	$0.00	$0.00	$0.00	422120.c
$0.00	$13.60	$1.20	$70.40	$3.90	422121.1.a
$0.00	$0.00	$0.00	$0.00	$0.00	422121.1.b
$0.00	$12.20	$1.20	$1.90	$1.50	422121.1.c
$0.00	$2,859.20	$0.00	$1,466.40	$4,659.60	422121.2.a
$0.00	$2,856.40	$2,578.60	$5,176.30	$6,494.20	422121.2.b
$0.00	$247.30	$15.20	$76.80	$54.90	422121.3.a
$0.00	$0.00	$0.00	$0.00	$0.00	422121.3.b
$84,375.00	$0.00	$0.00	$0.00	$0.00	423005
$0.00	$0.00	$31.10	$467.70	$59.70	423012.b
$0.00	$0.00	$128.00	$0.00	$147.60	423611
$0.00	$1,457.80	$554.70	$387.40	$514.60	423612.a
$0.00	$167,476.90	$26,800.00	$20,691.70	$21,955.60	423612.b
$0.00	$0.00	$0.00	$0.00	$0.00	423806
$0.00	$0.00	$0.00	$0.00	$0.00	423829.a
$0.00	$3,824.40	$3,677.60	$7,407.50	$25,993.10	423829.b
$0.00	$0.00	$104.10	$116.20	$0.00	423892
$301.40	$0.00	$0.00	$0.00	$0.00	424041.a
$230.40	$0.00	$0.00	$0.00	$0.00	424041.b
$0.00	$0.00	$0.00	$0.00	$0.00	424041.c

Table 2. Unit Cost Factors (in thousands) Expressed as Unit Cost per Mission Workload by PE Code and MSC

The OMA dollars required for non-workload-based Program Elements for year t+1 is estimated by multiplying the sum of OMA dollars for all non-workload-based PE's in year t by an inflation index for year t+1.

Finally, the total forecasted OMA dollar requirement for all PE's is determined by summing the OMA dollars for workload-based Program Elements and non-workload-based Program Elements.

[2] See Table 1 for a listing of Program Element missions

2. MODEL FORMULATION

2.1. Scoping the Problem

Even though AMC allocates OMA funds to thirty Major Subordinate Commands and Separate Reporting Activities, analysis of historical data reveals that five of the thirty MSC's account for approximately eighty percent of AMC's total annual OMA dollar expenditures. Table 3 shows the percentage of FY94 OMA dollars for these five Major Subordinate Commands [8].

Major Subordinate Command	Location	% OMA
U.S. Army Industrial Operations Command (IOCOM)	Rock Island, IL	41.9
U.S. Army Aviation and Troop Command (ATCOM)	St. Louis, MO	14.7
U.S. Army Communications and Electronics Command (CECOM)	Fort Monmouth, NJ	7.9
U.S. Army Missile Command (MICOM)	Redstone Arsenal, AL	10.6
U.S. Army Tank-Automotive Command (TACOM)	Warren, MI	8.5
	Total	83.6

Table 3. AMC Major Subordinate Commands Currently Included in RAM

2.2. Mathematical Formulation of the OMA Dollar Allocation Problem

Indices

t: current year of the planning horizon. Year $t+1$ denotes the forecasting year. The planning horizon consists of the years used to calculate multi-year moving averages and the forecasting year. The planning horizon is represented by the set of years $\{ t-l+1,\ldots, t-1, t, t+1 \}$. l is an indicator variable that specifies the number of years to be included in the moving average and takes on feasible values from the set $l \in \{ 1, 2, 3,\ldots\}$. The sequence of years $\{ t-l,\ldots,t \}$ denote the base years that are used in computing the moving average cost factor denoted by $\bar{c}_{ik}(t,l)$ (see below) for year t.

i: index for workload-based Program Elements (WPE), where $i \in \{ 1, 2,\ldots, I(t) \}$ and the number of WPE, $I(t)$, depends upon year t.

j: index for non-workload-based Program Elements (NWPE), where $j \in \{ 1, 2,\ldots, J(t) \}$ and the number of NWPE, $J(t)$, depends upon year t.

k: index for Major Subordinate Commands (MSC), where $k \in \{ 1, 2,\ldots, K(t) \}$ and the number of MSC, $K(t)$, depends upon year t.

Computational Factors

$\bar{c}_{ik}(t,l)$: denotes the mission workload cost factor for Program Element i at Major Subordinate Command k computed as a l-year moving average according to equation (4) below for the sequence of years $\{ t-l+1,\ldots,t-1, t \}$. Throughout the remainder of the paper, the sequence $\{ t-l+1,\ldots,t-1, t \}$ is denoted by the pair (t,l). For the special case of $l=1$, the cost factor $c_{ik}(t,1)$ is computed using data from year t only (see equation (5)).

$d(t)$: inflation factor that accounts for the annual inflation rate used in forecasting OMA dollars from the current year t to year $t+1$.

$e(t)$: productivity factor that accounts for the annual increase in worker productivity from the current year t to year $t+1$ (note: $e(t)$ reflects an annual increase in worker productivity of one percent as currently specified by Presidential mandate).

OMA Dollar Allocation Variables

$M(t)$: total OMA dollars allocated to AMC by the Department of the Army for year t.

$N(t)$: total OMA dollars allocated by AMC for all workload-based programs in year t.

$n_{ik}(t)$: OMA dollars allocated by AMC for workload-based Program Element i at Major Subordinate Command k in year t.

$O(t)$: total OMA dollars allocated by AMC for all non-workload-based program in year t.

$o_{jk}(t)$: OMA dollars allocated by AMC for non-workload-based Program Element i at Major Subordinate Command k in year t.

OMA Dollar Expenditure Variables

$R(t)$: total OMA dollars spent by AMC for all workload-based Program Elements in year t.

$R(t+1)$: total OMA dollar requirement forecasted for all workload-based AMC Program Elements and all Major Subordinate Commands in year $t+1$.

$r_{ik}(t)$: total OMA dollars spent for workload-based Program Element i at Major Subordinate Command k in year t.

$S(t+1)$: total OMA dollar requirement forecasted for all non-workload-based AMC Program Elements and all Major Subordinate Commands in year $t+1$.

$s_{jk}(t)$: total OMA dollars spent for non-workload-based Program Element j at Major Subordinate Command k in year t.

$U(t)$: total OMA dollars spent for all workload- and non-workload-based AMC Program Elements and all Major Subordinate Commands in year t.

$U(t+1)$: total OMA dollar requirement forecasted for all workload- and non-workload-based AMC Program Elements and all Major Subordinate Commands in year $t+1$.

Other Variables

$w_{ik}(t,l)$: total workload for Program Element i at Major Subordinate Command k in year t.

Assumptions

The major assumptions included in the formulation of the problem are:

- finite planning horizon consisting of $l+1$ equal time periods ("years");
- AMC's only source of OMA dollars in each year t are the OMA dollars allocated to AMC by the Department of the Army (DA);
- AMC distributes its entire allocation of OMA dollars to its Major Subordinate Commands in each year t; and

Constraints

$n_{ik}(t) + o_{jk}(t) \leq M(t) \quad \forall (i,j)$: OMA dollar allocation constraint; (1)

$R(t) \leq M(t)$: OMA dollar spending constraint; (2)

$r_{ij}(t) \geq 0 \ \forall (i,j)$: problem feasibility constraint. (3)

Modeling Relationships and Equations

The average cost per unit to perform the mission workload (i.e., mission workload cost factor; see Table 3) for each Program Element i given Major Subordinate Commands $k \in \{ 1, 2,..., K(t) \}$ for year t is computed for each $i \in \{ 1, 2,..., I(t) \}$ as

$$\bar{c}_{ik}(t,l) = \frac{\frac{1}{l} \sum_{t-l+1}^{t} n_{ik}(h)}{w_{ik}(t,l)}. \tag{4}$$

When only <u>one</u> year, year t, is used as the base-year for computing the mission workload cost factor, then the workload cost factor formula is given by

$$\bar{c}_{ik}(t,1) = \frac{n_{ik}(t)}{w_{ik}(t,1)} \tag{5}$$

The total OMA dollars allocated to all workload- and non-workload-based Program Elements i across all Major Subordinate Commands k in year t are given by

$$N(t) = \sum_{i=1}^{I(t)} \sum_{k=1}^{K(t)} n_{ik}(t) \tag{6}$$

and

$$O(t) = \sum_{j=1}^{J(t)} \sum_{k=1}^{K(t)} o_{jk}(t) \ , \tag{7}$$

respectively.

The conservation equality constraint for the allocation of OMA dollars is

$$M(t) = N(t) + O(t). \tag{8}$$

The total OMA dollars spent for all workload- and non-workload-based Program Elements i across all Major Subordinate Commands k in year t are given by

$$R(t) = \sum_{i=1}^{I(t)} \sum_{k=1}^{K(t)} r_{ik}(t) \tag{9}$$

and

$$S(t) = \sum_{j=1}^{J(t)} \sum_{k=1}^{K(t)} s_{jk}(t) \ , \tag{10}$$

respectively.

The conservation equality constraint for the OMA dollars spent is

$$U(t) = R(t) + S(t). \tag{11}$$

The forecasted workload for workload-based Program Element i and Major Subordinate Command k in year t+1 is

$$w_{ik}(t+1) = e(t)\, w_{ik}(t). \tag{12}$$

The total forecasted OMA dollars required for all workload-based Program Elements i and all Major Subordinate Commands k in year t+1 is given by

$$R(t+1) = d(t)\left[\sum_{i=1}^{I(t)} \sum_{k=1}^{K(t)} c_{ik}(t)\, w_{ik}(t+1)\right]. \tag{13}$$

The total forecasted OMA dollars required for all non-workload-based Program Elements j and all Major Subordinate Commands k in year t+1 is given by

$$S(t+1) = d(t)\left[\sum_{j=1}^{J(t)} \sum_{k=1}^{K(t)} s_{jk}(t)\right]. \tag{14}$$

The total OMA dollar requirement forecasted for all workload- and non-workload-based AMC Program Elements and all Major Subordinate Commands in year $t+1$ is

$$U(t+1) = R(t+1) + S(t+1). \tag{15}$$

3. DECISION SUPPORT SOFTWARE SYSTEM (DSSS)

Since 1990, the Army's operating budgets have been declining as cuts were made to force structure. However, the operational tempo during this same time has remained high. In an attempt to manage money resources more efficiently, decision makers at the

executive level of the Army have looked for ways to creatively support operational and tactical commanders in the field with *just-in-time* purchases of supplies and services. One effort to support this need has been to embed the RAM in a decision support software system (DSSS). This step gives decision makers at the Army Material Command (AMC) the ability to perform quick-turn-around "what if" analysis of resource funding trade-offs. Using the RAM DSSS, it is possible to: (1) quickly forecast OMA dollar requirements for MSC's, (2) evaluate the impact of changes to the level of OMA dollar funding made by the Department of the Army (DA) and the Department of Defense (DoD) during the budget formulation process, and (3) evaluate the impact of budget changes on AMC's Major Subordinate Commands before such changes to funding are actually made.

3.1. System Development Process

The purpose in designing, developing, testing, and implementing RAM in a fully operational DSSS was to provide AMC's decision makers with a tool to help them make good resource management decisions. The DSSS development was accomplished in four phases:

Phase 1. Functional Decomposition of the Resource Allocation Problem;
Phase 2. Preliminary Design of the RAM Architecture and Systems Modules;
Phase 3. Development of the RAM System Prototype; and
Phase 4. Full Development of the RAM Decision Support Software System.

The RAM development process is shown in Figure 1 along with the substeps accomplished in each major phase. The development process shown here follows an

approach used by McGinnis [6] to develop a decision support software system for resource scheduling for the U.S. Army's basic combat training (BCT) program.

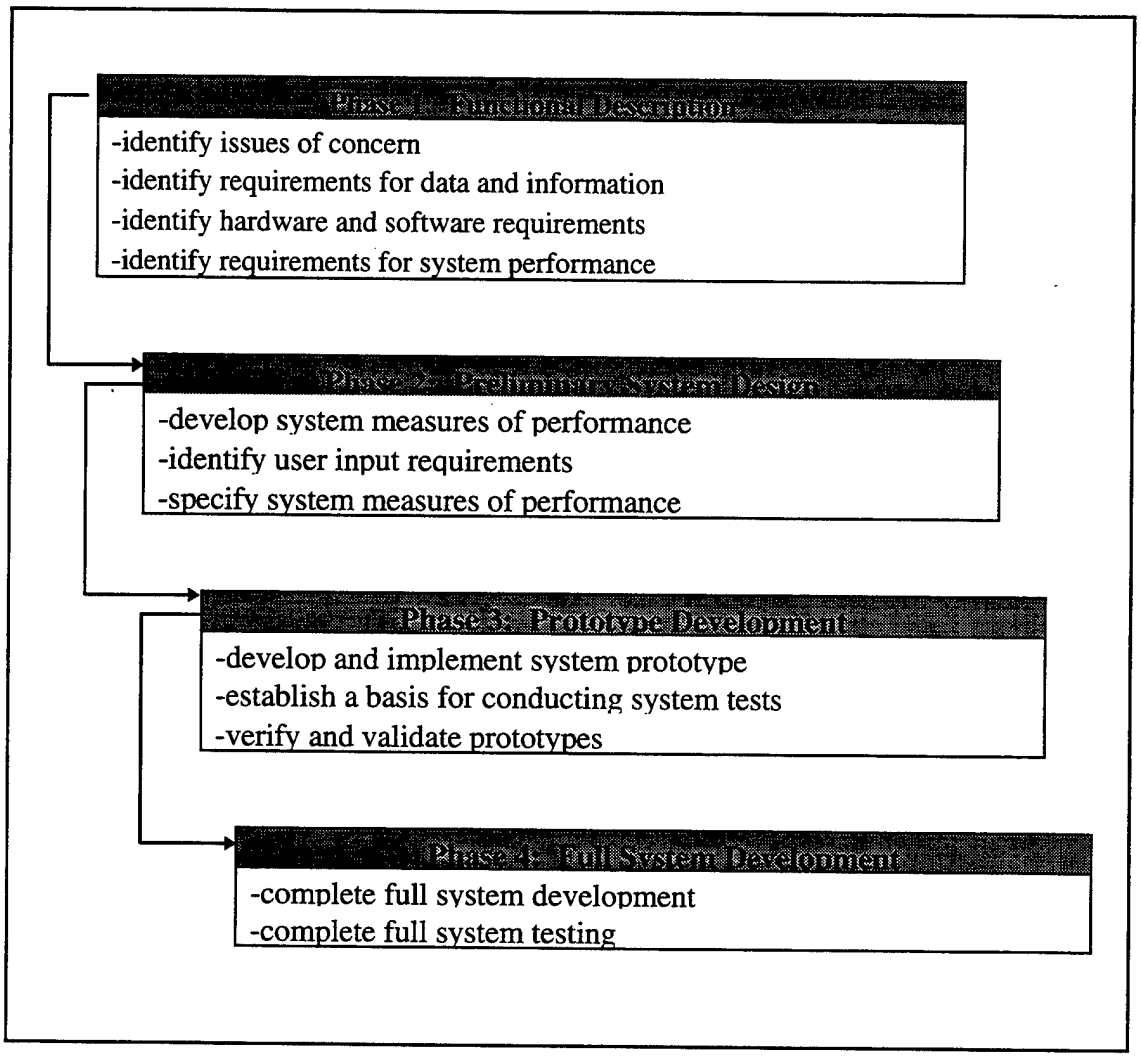


Figure 1. Decision Support Software System Development Phases

The main objective of Phase 1 was to identify the primary functions of the RAM in terms of how the system could best support AMC's resource allocation decision process. In Phase 2, system architecture was graphically represented through a set of

interconnected modules where each module corresponds to a functional requirement of the system (see Figure 2). The system modules are:

1. module input and output;
2. module functions;
3. functional procedures that define the logic and rules by which each module operates; and
4. flow of data between modules.

In Phase 3, prototypes of each module were implemented within a common computer operating system (see Figure 2), and procedures were developed to control the flow of data between modules. The final step of Phase 3 was prototype testing. In Phase 4, the modules were linked to form the complete system. Phase 4 concluded with full system testing (see Appendix C)

3.2 System Architecture

The RAM system is based on a modular design and implemented in a computer spreadsheet environment called *Microsoft Excel for Windows Version 4.0.* In the Microsoft Excel spreadsheet, the system modules are dynamically linked (see Figure 2) to enable dynamic data exchange (DDE). The system functions are automated through the use of advanced macros programmed in Excel. Macros provide flexibility for implementing and fully automating the forecasting and allocation routines and for streamlining calculations. The functionality of each RAM module is characterized by the descriptive module names.

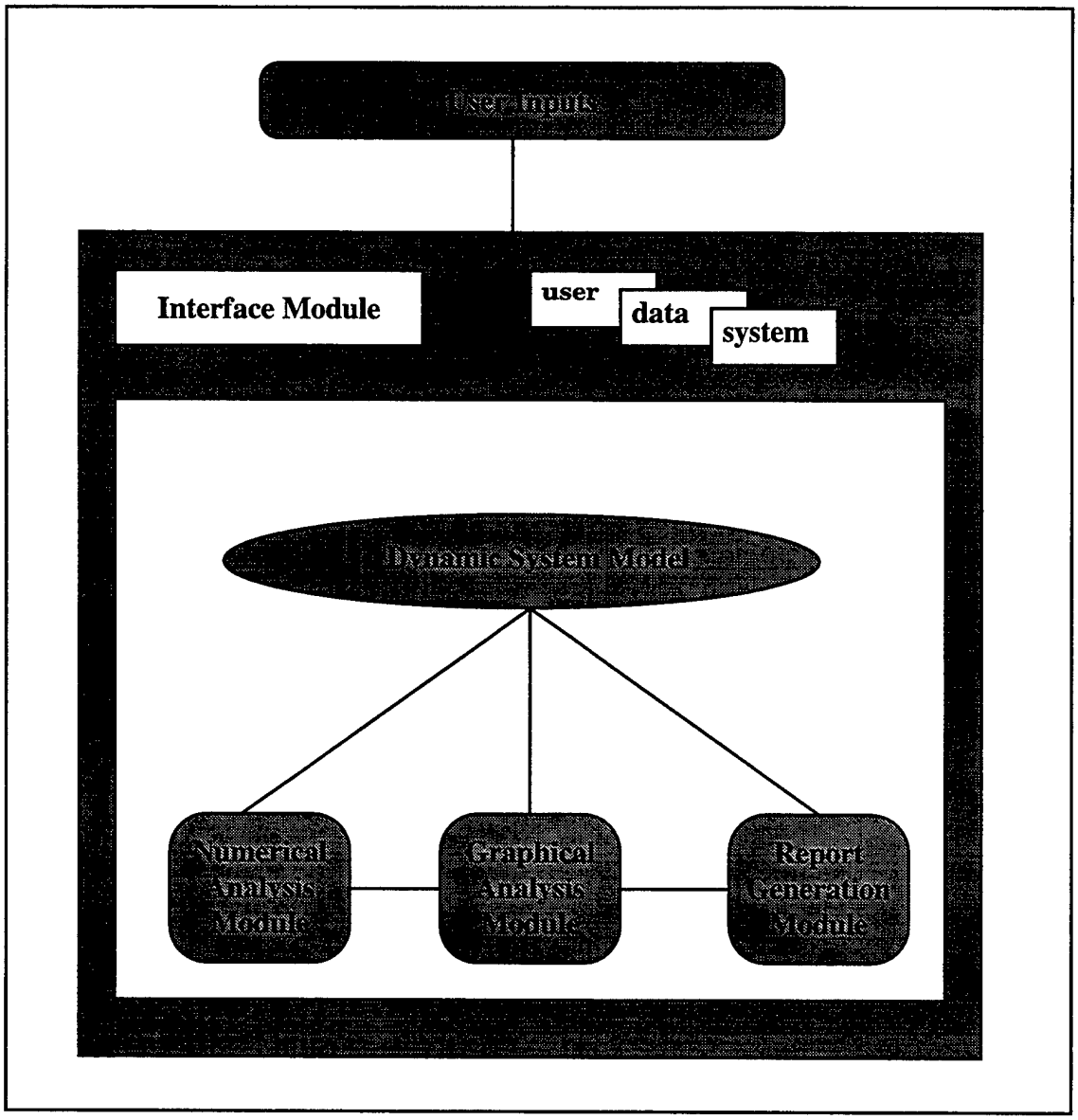


Figure 2. Decision Support Software System Architecture and Modules

The *Numerical Analysis Module* allows the user to edit base-year workloads, base-year dollars, forecast-year workloads and the inflation and productivity index factors. The user enters data by "clicking" various options presented to the system user through either a Dialog Box (Figure 3) or an Edit Box (Figure 4).

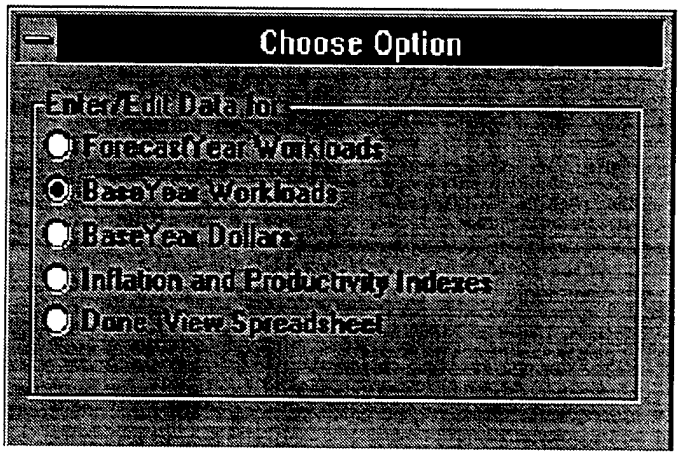


Figure 3. Choose Option Dialog Box

The Edit Box shown below illustrates user options specifically designed for the Communications and Electronics Command (CECOM).

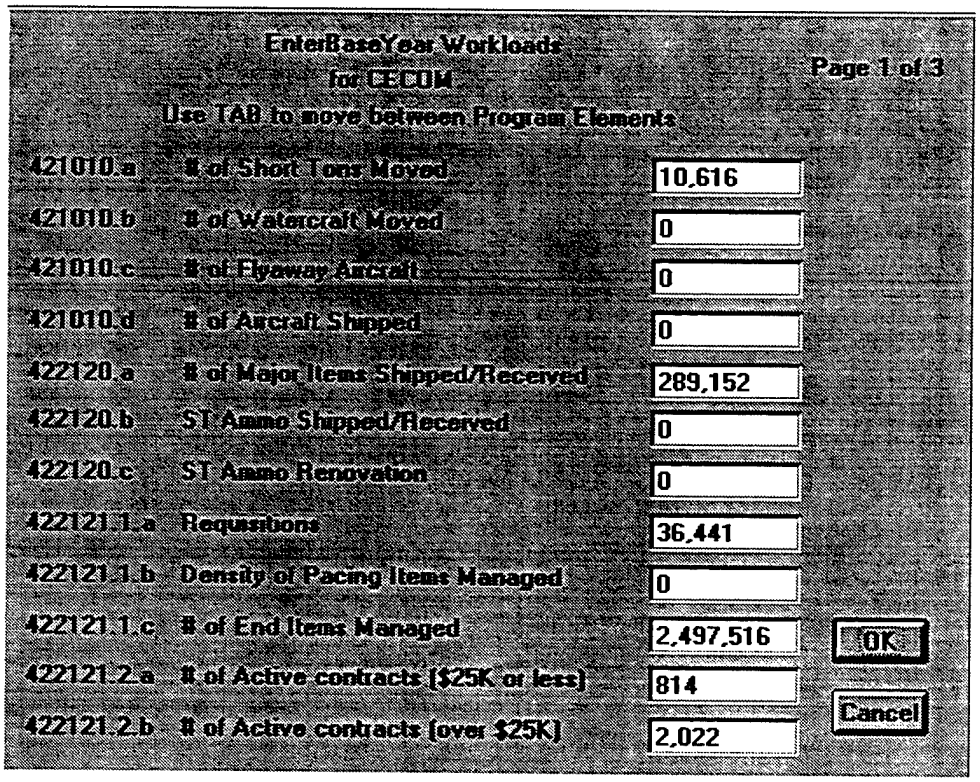


Figure 4. Workload Data Edit Box (1 of 3)

After the user enters the necessary data into the model, the *Numerical Analysis Module* computes $R(t+1)$, the total OMA dollar requirement forecasted for all workload-based AMC Program Elements and all Major Subordinate Commands in year $t+1$; $S(t+1)$, the total OMA dollar requirement forecasted for all non-workload-based AMC Program Elements and all Major Subordinate Commands in year $t+1$; and $U(t+1)$, the total OMA dollar requirement forecasted for all workload and non-workload-based AMC Program Elements and all Major Subordinate Commands in year $t+1$. The computational results for selected Program Elements are summarized by Major Subordinate Command in the model.

The *Graphical Analysis Module* displays graphical output of forecasted values and the differences between the numerical output for up to two "runs" [3] of the model. The *Report Generation Module* prints numerical and graphical results. RAM output can be saved by the system user under user-designated file names for future reference. Both numerical and graphical results may be displayed to the computer monitor or may be printed by either selecting the appropriate menu option from a Dialog Box or by using key strokes such as, pressing "*Ctrl-p.*" Sample model output from RAM is given in Appendix A.

[3] The term "runs" refers to the execution of the model by the user. The user can compare output of two different input scenarios. The graphs compare the outputs of "This run" to the "Previous run".

4. MODEL VALIDATION AND NUMERICAL RESULTS

The "goodness" of any model may be evaluated through several approaches. For example, model results can be compared to other existing "validated" models, or experts can be asked to discriminate between model output and real world data (Turing Tests), or model output can be compared to real world data [5]. For this study, the RAM was validated by comparing forecasted OMA dollar estimates obtained from RAM with actual (historical) OMA dollar expenditures. Table 4 compares the actual OMA dollars spent for fiscal year FY93 with OMA dollar expenditures estimated for the same year using RAM, for each of the five Major Subordinate Commands given in Table 2. The percent difference between the actual and estimated expenditures is also given. A negative percent indicates that the RAM under-estimates the actual expenditure of OMA dollars. Averaged over each Major Subordinate Command, we see that the absoute error of the forecasted estimates of OMA dollars computed using RAM is 13.8%[4]. The percent difference between the forecasted and the actual total amounts of OMA dollars spent for FY93 is shown to be 3.3% (see Table 4).

[4] 13.8% was determined by computing the absolute error and averaging it over the five MSC's.

MSC	FY93 OMA Funds Spent (millions)	RAM Forecast of OMA Funds (millions)	Percent Difference[5]
IOCOM	$386	$495	28.2%
ATCOM	$213	$229	7.5%
CECOM	$190	$121	-36.3%
MICOM	$233	$215	-7.7%
TACOM	$117	$117	0%
TOTAL	$1,139	$1,177	3.3%

Table 4. Comparison of Actual versus Estimated OMA Dollars

Figure 5 shows a graphical comparison of the results from Table 3. The graphical results show that RAM over-estimated the amount of dollars actually needed by IOCCOM and ATCOM but under-estimated the OMA dollars actually spent by CECOM and MICOM in FY93.

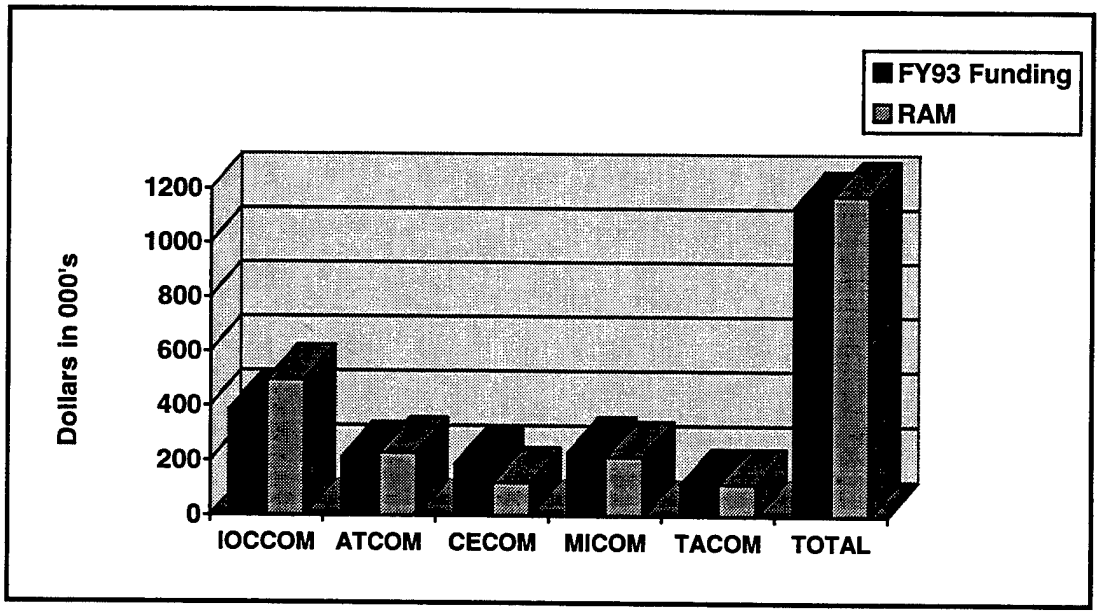


Figure 5. Graphical Comparison of Actual versus Forecasted OMA Funding for FY93

[5] Percent difference refers to the error between the actual OMA dollars spent and the forecasted dollars using RAM.

These outcomes may be explained by the occurrence of uncontrollable events that affected each Major Subordinate Command differently. For example, in 1993 the Army deployed a sizable number of forces around the world (e.g., Somalia and Kuwait). The actual costs for deploying, sustaining and redeploying our forces unavoidably drove up the total costs for certain program elements (e.g., 423829.b, Support for Major Items in CECOM). However, the 1993 OMA dollar estimates were computed using cost factors where the historical data (used to calculate the cost factors) did not account for the 1993 troop deployments. These circumstances lead to OMA dollar estimates that were below actual expenditures for some Major Subordinate Commands. In other cases, cost factor computations fail to pick up the trend of declining budgets that started in 1990, leading to the over estimation of OMA dollar expenditures for some Program Elements and Major Subordinate Commands (see Figure 6)[7]. Forecasting methods based only on historical data cannot overcome such perturbations as Somalia. However, future efforts to enhance the model could incorporate the trend depicted in the graph below (Figure 6).

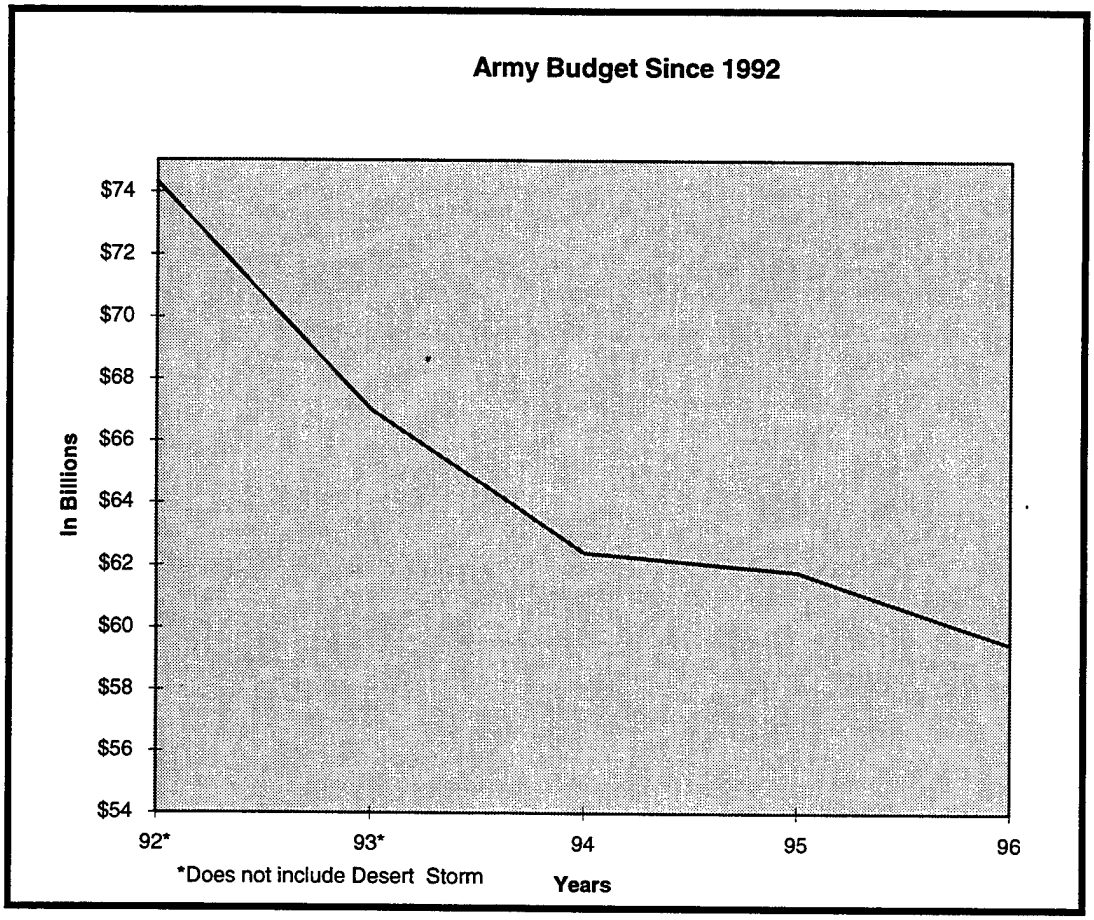


Figure 6. The Army Budget 1992-1996 (estimated)

5. CONCLUSIONS

Currently, the scope of the *Resource Allocation Model* is limited to forecasting OMA dollar allocations for the Major Subordinate Commands listed in Table 3. Future work will include incorporating additional Major Subordinate Commands into the model.

The RAM Decision Support Software System (DSSS) gives executive-level decision makers at AMC a user-friendly decision analysis tool for conducting "what if" analyses of important OMA dollar allocation issues. More specifically, the Resource

Allocation Model helps AMC to budget their resource requirements for each Major Subordinate Command (MSC) based on the OMA dollars allocated to AMC each year by the Army Budget Office through the Program Budget Guidance (PBG) document [1]. The RAM can give AMC Resource Managers at lower levels a means of quickly responding to questions from high-level AMC leaders regarding the impact of budget decisions on Program Element missions.

The main focus of this work has been on the formulation of a moving average model for forecasting OMA dollars to MSC's and on implementing a decision support software system for the Army Materiel Command that provides quick and acceptably accurate forecasts of OMA dollars. We have identified several areas where improvements can be made to the Resource Allocation Model and decision support software system. We conclude with a brief description of potential areas of future work.

- Although the mathematics of the resource allocation model reflect how OMA dollars are actually allocated from AMC to the Major Subordinate Commands, the current forecasting approach only uses one base-year to determine mission workload cost factors. In some cases, forecasts might be improved if additional years were incorporated into the computations of mission workload cost factors.

- It is recommended to make changes to the RAM DSSS dialog boxes and Excel macros that give the system user options for choosing different numbers of years used in computing mission workload cost factors.

- Although it has been shown that mission workload cost factors are "good" estimators for forecasting the allocation of OMA dollars (see Table 3), we

recommend that the model be extended to incorporate other "predictors" such as work-years.

- At this time, RAM forecasts OMA dollars required for the largest five of AMC's thirty Major Subordinate Commands (see Table 3). An obvious extension to both the RAM model and the decision support software system would be to include other Major Subordinate Commands belonging to AMC.

- Extend RAM and the decision support software system by building a library of historical scenarios that can be used for forecasting OMA dollars. For example, the OMA dollars required to support military operations, such as, Operation Just Cause, Operation Desert Storm, and others would be stored in a data base. The user could then select one of the historical scenarios to compute cost factors when the future operation is similar to a historical operation from the library. These historical scenarios can be used to help predict dollar expenditures for other scenarios which closely approximate the historical data.

- Allow the user to modify the Productivity index in order to accurately reflect the trend of the Program Budget Guidance.

- Incorporate the use of forecasts of the Army Budget.

APPENDIX A:

SAMPLE RAM OUTPUT

RAM output consists of 9 pages. Page 1 summarizes information about the forecasted OMA dollars for each of the five Major Subordinate Commands (note: a sixth MSC has been added since the inception of the model). Page 1 also displays the current "run" values, values from the previous "run", value differences between the two "runs" and the current index values. Pages 2-4 give graphical representations of the data from page 1 for the Program Elements (output shown here illustrates values for PEs 421010.a, 422120.a, and 422121.3.a). Finally, pages 5-9 contain the following data for all Program Elements: Forecasted OMA Dollar, Forecasted Workload, Base Year Direct Dollars, Base Year Workloads and Base Year Unit Cost Factors.

U.S. Army Materiel Command
Resource Allocation Model (RAM) 951

FY 1995 Budget Forecasted from FY 1994 only

This Run of Proposal for FY 95 Budget by MSC ($'s in 000's)

IOC	ATCOM	CECOM	MICOM	TACOM	CBDCOM	TOTAL	1995	
0.0	3,363.7	1,465.2	10,861.4	8,797.6	0.0	24,487.9	421010.a	# of Short Tons Moved
0.0	3,750.5	3,384.5	1,428.8	31,202.2	0.0	39,766.0	422120.a	# of Major Items Shipped/Received
0.0	66,444.8	30,001.8	53,236.8	403,452.3	4,389.4	557,525.2	422121.3.a	# of Active Major Items Fielded
942,866.7	57,044.0	32,525.5	69,847.9	105,204.8	42,934.4	1,250,423.3	Other AG42s	all other AG42 PE's
942,866.7	**130,603.0**	**67,377.1**	**135,375.0**	**548,656.8**	**47,323.8**	**1,872,202.4**	**Grand Total**	

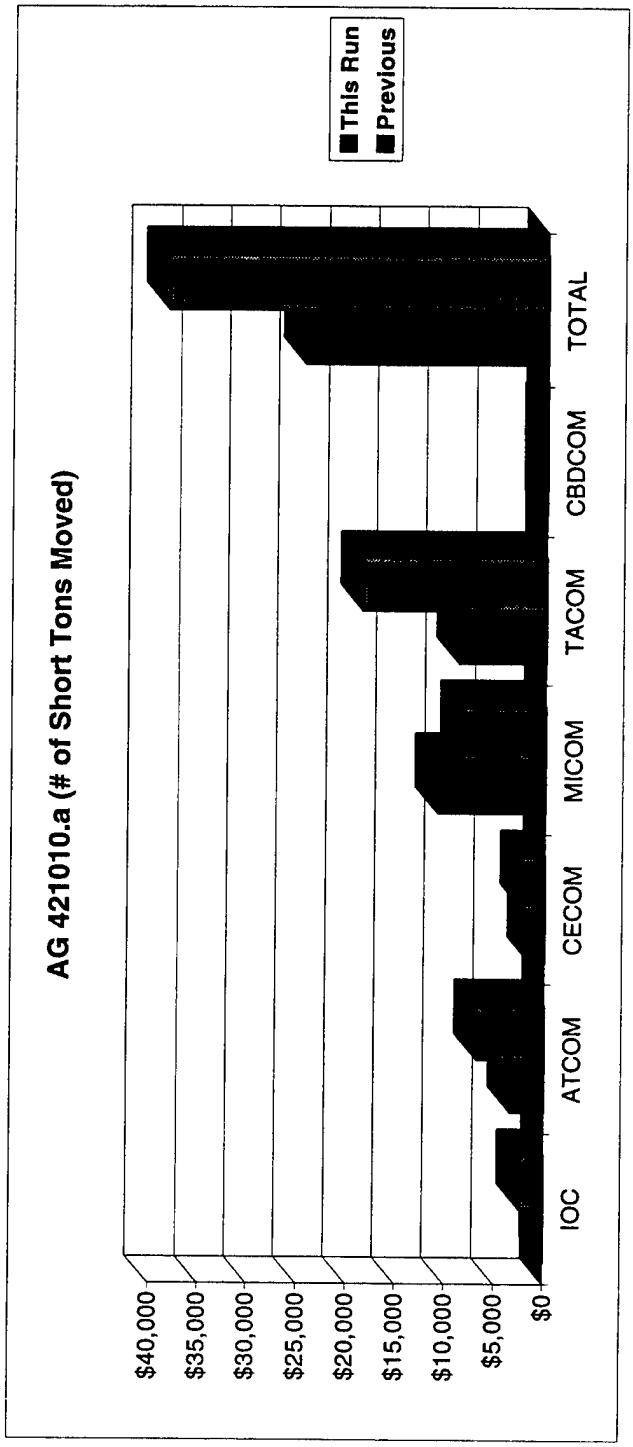
Previous Proposal for FY 95 Budget by MSC ($'s in 000's)

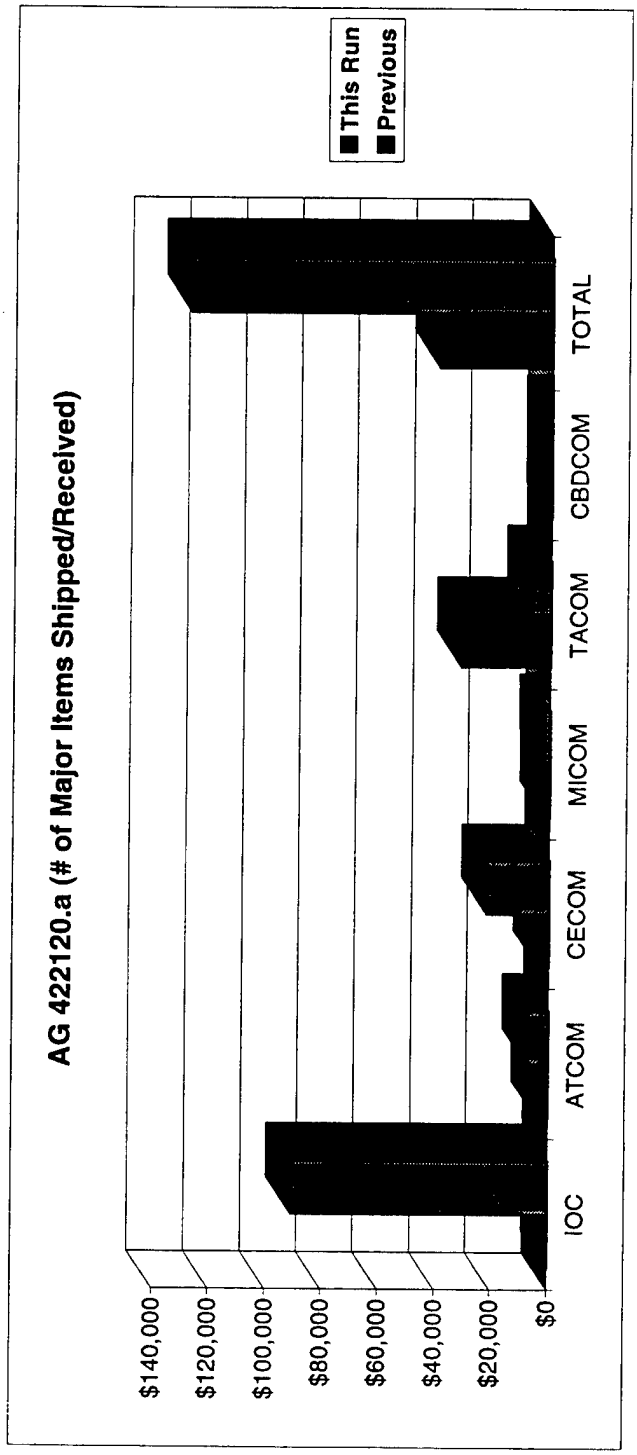
IOC	ATCOM	CECOM	MICOM	TACOM	CBDCOM	TOTAL	1995	
2,402.5	6,812.0	2,255.3	8,331.4	18,574.5		38,375.6	421010.a	# of Short Tons Moved
90,534.5	7,096.4	21,694.4	1,843.5	6,490.1		127,658.8	422120.a	# of Major Items Shipped/Received
33,615.3	68,386.0	48,531.9	105,162.1	48,507.1		304,202.4	422121.3.a	# of Active Major Items Fielded
0.0	0.0	0.0	0.0	0.0		0.0	Other AG42s	all other AG42 PE's
92,936.9	**13,908.4**	**23,949.7**	**10,174.8**	**25,064.6**		**166,034.5**	**Grand Total**	

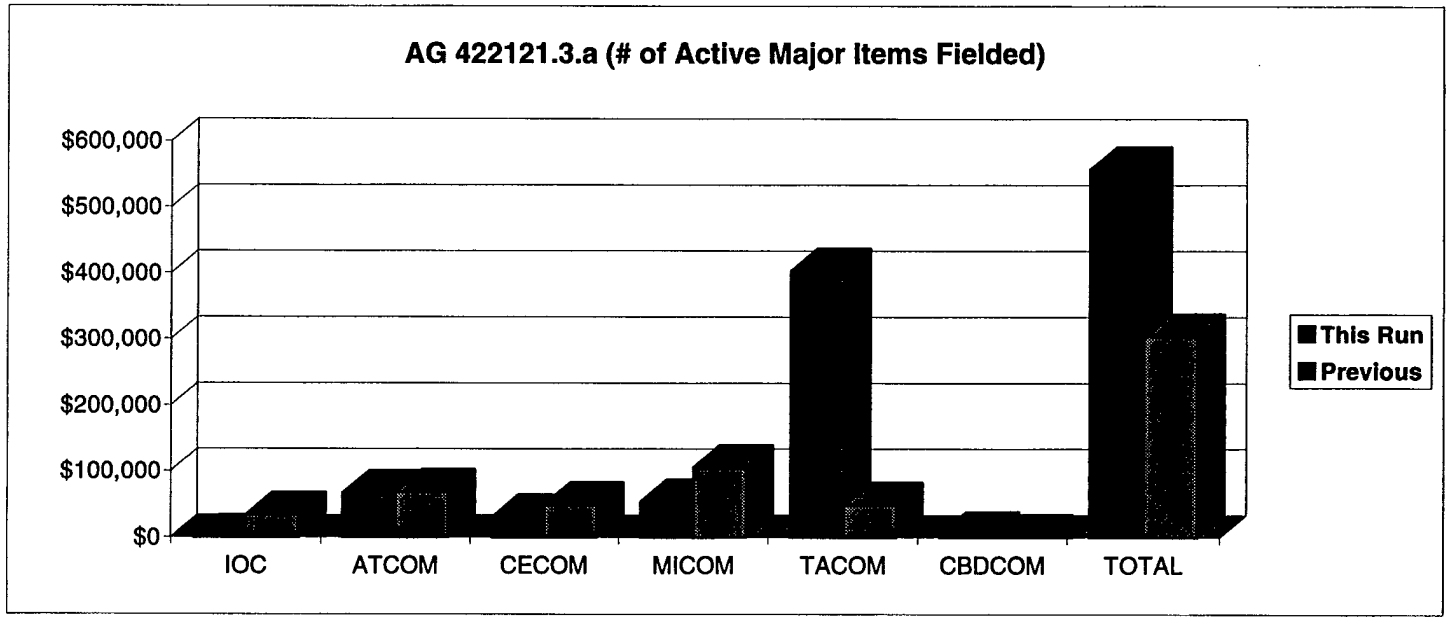
Proposal Delta (This Run - Previous) ($'s in 000's)

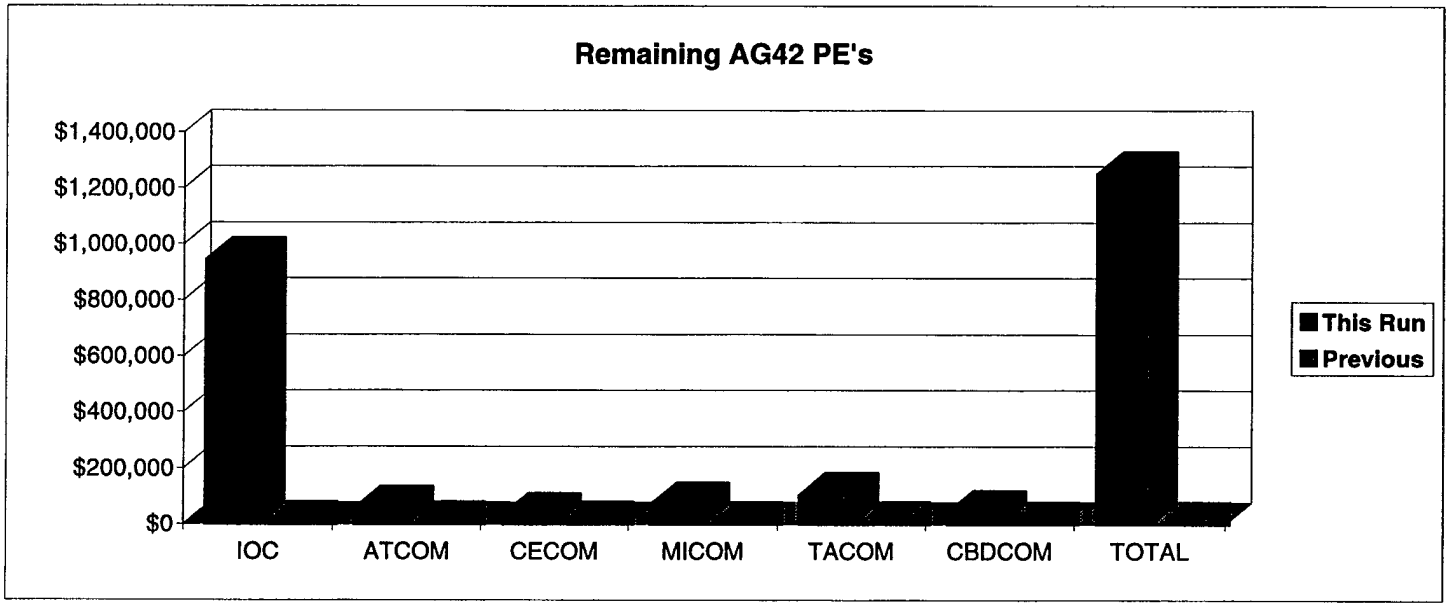
IOC	ATCOM	CECOM	MICOM	TACOM	CBDCOM	TOTAL	1995	
-2,402.5	-3,448.4	-790.0	2,530.0	-9,776.9	0.0	-13,887.8	421010.a	# of Short Tons Moved
-90,534.5	-3,345.9	-18,309.9	-414.7	24,712.1	0.0	-87,892.8	422120.a	# of Major Items Shipped/Received
-33,615.3	-1,941.1	-18,530.1	-51,925.2	354,945.2	4,389.4	253,322.8	422121.3.a	# of Active Major Items Fielded
942,866.7	57,044.0	32,525.5	69,847.9	105,204.8	42,934.4	1,250,423.3	Other AG42s	all other AG42 PE's
-126,552.2	**-8,735.4**	**-37,630.1**	**-49,809.8**	**369,880.3**	**4,389.4**	**151,542.2**	**Grand Total**	

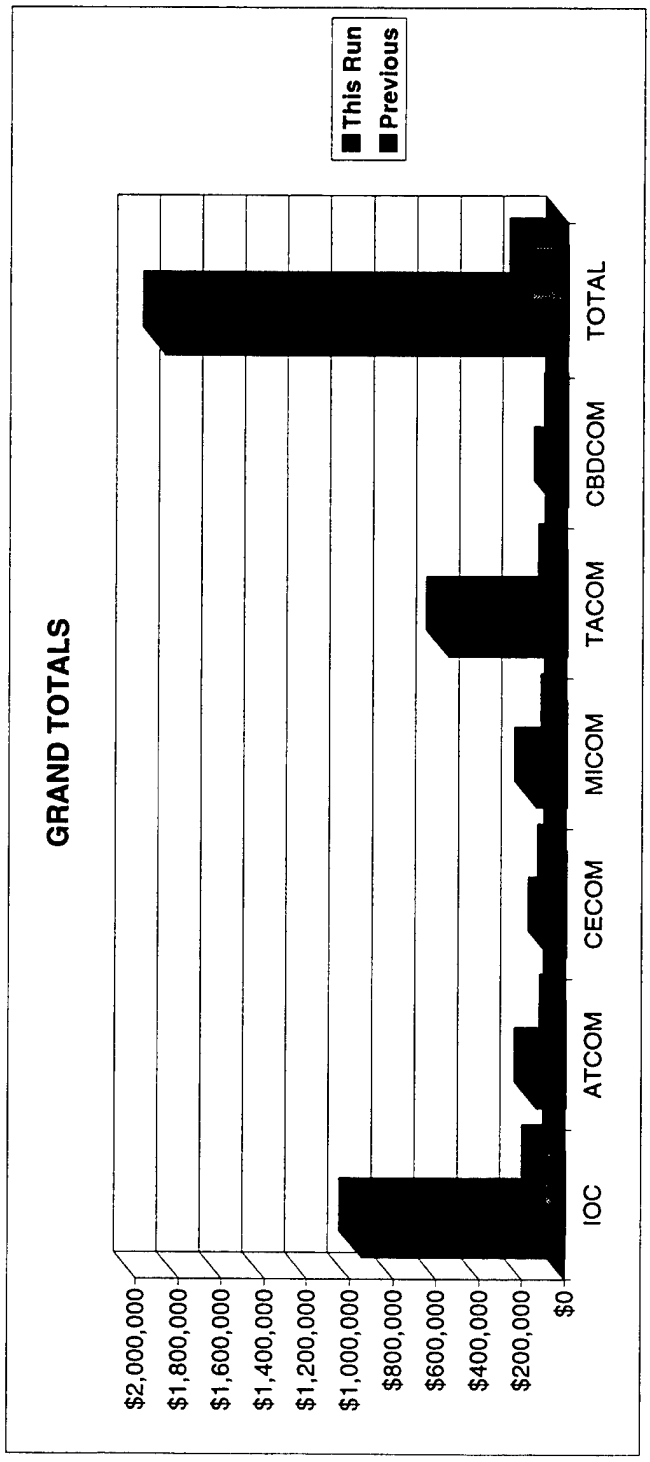
	Indexes	
Current Inflation Factor =	2.40%	2.40% = Original Inflation Factor
Current Efficiency Factor =	1.00%	1.00% = Original Efficiency Factor


AG 421010.a (# of Short Tons Moved)
This Run
Previous
$40,000
$35,000
$30,000
$25,000
$20,000
$15,000
$10,000
$5,000
$0
IOC
ATCOM
CECOM
MICOM
TACOM
CBDCOM
TOTAL


AG 422120.a (# of Major Items Shipped/Received)
This Run
Previous
$140,000
$120,000
$100,000
$80,000
$60,000
$40,000
$20,000
$0
IOC
ATCOM
CECOM
MICOM
TACOM
CBDCOM
TOTAL


AG 422121.3.a (# of Active Major Items Fielded)
$600,000
$500,000
$400,000
$300,000
$200,000
$100,000
$0
IOC
ATCOM
CECOM
MICOM
TACOM
CBDCOM
TOTAL
This Run
Previous


Remaining AG42 PE's
$1,400,000
$1,200,000
$1,000,000
$800,000
$600,000
$400,000
$200,000
$0
IOC
ATCOM
CECOM
MICOM
TACOM
CBDCOM
TOTAL
This Run
Previous


GRAND TOTALS
This Run
Previous
$2,000,000
$1,800,000
$1,600,000
$1,400,000
$1,200,000
$1,000,000
$800,000
$600,000
$400,000
$200,000
$0
IOC
ATCOM
CECOM
MICOM
TACOM
CBDCOM
TOTAL

ForecastYear95 0MA 7S Dollars by MSC ($'s in 000's)

IOC	ATCOM	CECOM	MICOM	TACOM	CBDCOM	TOTAL	1995	Description
0.0	3,363.7	1,465.2	10,861.4	8,797.6	0.0	24,487.9	421010.a	# of Short Tons Moved
0.0	477.9	0.0	0.0	0.0	0.0	477.9	421010.b	# of Watercraft Moved
0.0	1,317.9	0.0	0.0	0.0	0.0	1,317.9	421010.c	# of Flyaway Aircraft
0.0	517.0	0.0	0.0	0.0	0.0	517.0	421010.d	# of Aircraft Shipped
0.0	3,750.5	3,384.5	1,428.8	31,202.2	0.0	39,766.0	422120.a	# of Major Items Shipped/Received
0.0	0.0	0.0	6,397.2	0.0	0.0	6,397.2	422120.b	ST Ammo Shipped/Received
0.0	0.0	0.0	0.0	0.0	0.0	0.0	422120.c	ST Ammo Renovation
0.0	304.1	47.5	581.6	193.9	0.0	1,127.2	422121.1.a	Requisitions
0.0	0.0	0.0	0.0	0.0	0.0	0.0	422121.1.b	Density of Pacing Items Managed
0.0	3,265.4	2,925.8	1,332.4	11,148.2	0.0	18,671.8	422121.1.c	# of End Items Managed
0.0	8,988.5	0.0	5,741.2	27,681.2	570.1	42,981.0	422121.2.a	# of Active contracts ($25K or less)
0.0	6,776.1	10,754.2	10,662.9	10,810.2	2,540.0	41,543.4	422121.2.b	# of Active contracts (over $25K)
0.0	66,444.8	30,001.8	53,236.8	403,452.3	4,389.4	557,525.2	422121.3.a	# of Active Major Items Fielded
0.0	0.0	0.0	0.0	0.0	0.0	0.0	422121.3.b	# of Major Items Provisioned/New Flds
7,612.7	0.0	0.0	0.0	0.0	0.0	7,612.7	423005	# of Disposal Actions
0.0	17,663.8	5,257.7	6,547.9	9,854.8	2,414.5	41,738.5	423012.a	A Value (Log Management)
0.0	0.0	194.6	26,561.1	28,647.1	0.0	55,402.8	423012.b	# of Eaches Demil'ed
0.0	0.0	1,179.5	0.0	930.2	0.0	2,109.8	423611	# Auth Pop Incl Act Duty Mil/Contract
0.0	7,217.7	5,110.7	6,024.4	6,166.1	0.0	24,518.8	423612.a	# Auth Pop Incl Act Duty Mil/Contract
0.0	2,207.2	842.2	3,796.7	4,028.6	0.0	10,874.8	423612.b	# MIPS Used
0.0	0.0	0.0	0.0	0.0	0.0	0.0	423806	Acquisition Support to Project Manage
0.0	0.0	0.0	0.0	0.0	0.0	0.0	423829.a	# of Project Manager Offices
0.0	8,308.5	6,039.7	1,922.4	5,744.5	692.4	22,707.4	423829.b	# of Major Items Supported
0.0	0.0	173.4	280.3	0.0	0.0	453.7	423892	# Military Population Supported
214,312.9	0.0	0.0	0.0	0.0	0.0	214,312.9	424041.a	S/T Ammo Shipped/Received
720,941.2	0.0	0.0	0.0	0.0	0.0	720,941.2	424041.b	S/T Ammo Stored
0.0	0.0	0.0	0.0	0.0	0.0	0.0	424041.c	ST Ammo Renovation
0.0	0.0	0.0	0.0	0.0	0.0	0.0	422121.3	# of Students Trained
0.0	0.0	0.0	0.0	0.0	0.0	0.0	422121.3	# of Task Orders/Studies/Analysis
0.0	0.0	0.0	0.0	0.0	0.0	0.0	422121.3	# of TPS Support
0.0	0.0	0.0	0.0	0.0	36,717.4	36,717.4	425042	
0.0	0.0	0.0	0.0	0.0	0.0	0.0	unused 5	
0.0	0.0	0.0	0.0	0.0	0.0	0.0	unused 6	
0.0	0.0	0.0	0.0	0.0	0.0	0.0	unused 7	
0.0	0.0	0.0	0.0	0.0	0.0	0.0	unused 8	
0.0	0.0	0.0	0.0	0.0	0.0	0.0	unused 9	
942,866.7	130,603.0	67,377.1	135,375.0	548,656.8	47,323.8	1,872,202.4	**GRAND TOTALS**	

ForecastYear95 Workload by Program Element from MSC's

IOC	ATCOM	CECOM	MICOM	TACOM	CBDCOM	TOTAL	1995	Description
0.0	6,636.0	16,500.0	52,974.0	200,000.0	0.0	276,110.0	421010.a	# of Short Tons Moved
0.0	33.0	0.0	0.0	0.0	0.0	33.0	421010.b	# of Watercraft Moved
0.0	600.0	0.0	0.0	0.0	0.0	600.0	421010.c	# of Flyaway Aircraft
0.0	340.0	0.0	0.0	0.0	0.0	340.0	421010.d	# of Aircraft Shipped
0.0	84,765.0	543,589.0	36,678.0	2,338,991.0	0.0	3,004,023.0	422120.a	# of Major Items Shipped/Received
0.0	0.0	0.0	51,108.0	0.0	0.0	51,108.0	422120.b	ST Ammo Shipped/Received
0.0	0.0	0.0	0.0	0.0	0.0	0.0	422120.c	ST Ammo Renovation
0.0	22,000.0	38,906.0	8,150.0	49,644.0	0.0	118,700.0	422121.1.a	Requisitions
0.0	0.0	0.0	0.0	0.0	0.0	0.0	422121.1.b	Density of Pacing Items Managed
0.0	265,000.0	2,454,674.0	683,521.0	7,329,490.0	0.0	10,732,685.0	422121.1.c	# of End Items Managed
0.0	3,101.0	2,420.0	3,862.0	5,860.0	49.0	15,292.0	422121.2.a	# of Active contracts ($25K or less)
0.0	2,340.0	4,114.0	2,032.0	1,642.0	698.0	10,826.0	422121.2.b	# of Active contracts (over $25K)
0.0	265,000.0	1,941,319.0	683,521.0	7,244,105.0	258.0	10,134,203.0	422121.3.a	# of Active Major Items Fielded
0.0	0.0	0.0	0.0	0.0	0.0	0.0	422121.3.b	# of Major Items Provisioned/New Flds
89.0	0.0	0.0	0.0	0.0	0.0	89.0	423005	# of Disposal Actions
1.0	1.0	1.0	1.0	1.0	1.0	6.0	423012.a	A Value (Log Management)
0.0	0.0	6,176.0	56,024.0	473,685.0	0.0	535,885.0	423012.b	# of Eaches Demil'ed
0.0	0.0	9,088.0	0.0	6,217.0	0.0	15,305.0	423611	# Auth Pop Incl Act Duty Mil/Contract
0.0	4,884.0	9,088.0	15,338.0	11,819.0	0.0	41,129.0	423612.a	# Auth Pop Incl Act Duty Mil/Contract
0.0	13.0	31.0	181.0	181.0	0.0	406.0	423612.b	# MIPS Used
0.0	0.0	0.0	0.0	0.0	0.0	0.0	423806	Acquisition Support to Project Manage
0.0	0.0	0.0	0.0	0.0	0.0	0.0	423829.a	# of Project Manager Offices
0.0	2,143.0	1,620.0	256.0	218.0	15.0	4,252.0	423829.b	# of Major Items Supported
0.0	0.0	1,643.0	2,380.0	0.0	0.0	4,023.0	423892	# Military Population Supported
701,446.0	0.0	0.0	0.0	0.0	0.0	701,446.0	424041.a	S/T Ammo Shipped/Received
3,086,510.0	0.0	0.0	0.0	0.0	0.0	3,086,510.0	424041.b	S/T Ammo Stored
0.0	0.0	0.0	0.0	0.0	0.0	0.0	424041.c	ST Ammo Renovation
0.0	0.0	0.0	0.0	0.0	0.0	0.0	422121.3	# of Students Trained
0.0	0.0	0.0	0.0	0.0	0.0	0.0	422121.3	# of Task Orders/Studies/Analysis
0.0	0.0	0.0	0.0	0.0	0.0	0.0	422121.3	# of TPS Support
0.0	0.0	0.0	0.0	0.0	135,336.0	135,336.0	425042	
0.0	0.0	0.0	0.0	0.0	0.0	0.0	unused 5	
0.0	0.0	0.0	0.0	0.0	0.0	0.0	unused 6	
0.0	0.0	0.0	0.0	0.0	0.0	0.0	unused 7	
0.0	0.0	0.0	0.0	0.0	0.0	0.0	unused 8	
0.0	0.0	0.0	0.0	0.0	0.0	0.0	unused 9	

BaseYear94 Workload by Program Element from MSC's

IOC	ATCOM	CECOM	MICOM	TACOM	CBDCOM	TOTAL	1994	Description
0.0	6,500.0	11,005.0	16,356.0	206,565.0	0.0	240,426.0	421010.a	# of Short Tons Moved
0.0	35.0	0.0	0.0	0.0	0.0	35.0	421010.b	# of Watercraft Moved
0.0	300.0	0.0	0.0	0.0	0.0	300.0	421010.c	# of Flyaway Aircraft
0.0	200.0	0.0	0.0	0.0	0.0	200.0	421010.d	# of Aircraft Shipped
0.0	86,722.0	463,058.0	26,804.0	1,884,498.0	0.0	2,461,082.0	422120.a	# of Major Items Shipped/Received
0.0	0.0	0.0	29,586.0	0.0	0.0	29,586.0	422120.b	ST Ammo Shipped/Received
0.0	0.0	0.0	0.0	0.0	0.0	0.0	422120.c	ST Ammo Renovation
0.0	22,000.0	38,906.0	7,984.0	58,140.0	0.0	127,030.0	422121.1.a	Requisitions
0.0	0.0	0.0	0.0	0.0	0.0	0.0	422121.1.b	Density of Pacing Items Managed
0.0	283,918.0	2,454,674.0	672,975.0	7,358,203.0	0.0	10,769,770.0	422121.1.c	# of End Items Managed
0.0	3,275.0	0.0	4,058.0	3,987.0	52.0	11,372.0	422121.2.a	# of Active contracts ($25K or less)
0.0	2,473.0	3,808.0	2,135.0	1,036.0	665.0	10,117.0	422121.2.b	# of Active contracts (over $25K)
0.0	283,918.0	1,941,319.0	672,975.0	970,386.0	243.0	3,868,841.0	422121.3.a	# of Active Major Items Fielded
0.0	0.0	0.0	0.0	0.0	0.0	0.0	422121.3.b	# of Major Items Provisioned/New Flds
96.0	0.0	0.0	0.0	0.0	0.0	96.0	423005	# of Disposal Actions
0.0	1.0	1.0	1.0	1.0	1.0	5.0	423012.a	A Value (Log Management)
0.0	0.0	6,176.0	5,134.0	1,978.0	0.0	13,288.0	423012.b	# of Eaches Demil'ed
0.0	0.0	10,068.0	0.0	6,484.0	0.0	16,552.0	423611	# Auth Pop Incl Act Duty Mil/Contract
0.0	5,000.0	8,698.0	15,228.0	13,946.0	0.0	42,872.0	423612.a	# Auth Pop Incl Act Duty Mil/Contract
0.0	13.0	25.0	120.0	180.0	0.0	338.0	423612.b	# MIPS Used
0.0	0.0	0.0	0.0	0.0	0.0	0.0	423806	Acquisition Support to Project Manage
0.0	0.0	0.0	0.0	0.0	0.0	0.0	423829.a	# of Project Manager Offices
0.0	2,227.0	1,620.0	265.0	144.0	16.0	4,272.0	423829.b	# of Major Items Supported
0.0	0.0	2,201.0	2,445.0	0.0	0.0	4,646.0	423892	# Military Population Supported
595,551.0	0.0	0.0	0.0	0.0	0.0	595,551.0	424041.a	S/T Ammo Shipped/Received
298,089.0	0.0	0.0	0.0	0.0	0.0	298,089.0	424041.b	S/T Ammo Stored
819.0	0.0	0.0	0.0	0.0	0.0	819.0	424041.c	ST Ammo Renovation
0.0	0.0	0.0	0.0	0.0	0.0	0.0	422121.3	# of Students Trained
0.0	0.0	0.0	0.0	0.0	0.0	0.0	422121.3	# of Task Orders/Studies/Analysis
0.0	0.0	0.0	0.0	0.0	0.0	0.0	422121.3	# of TPS Support
0.0	0.0	0.0	0.0	0.0	135,336.0	135,336.0	425042	
0.0	0.0	0.0	0.0	0.0	0.0	0.0	unused 5	
0.0	0.0	0.0	0.0	0.0	0.0	0.0	unused 6	
0.0	0.0	0.0	0.0	0.0	0.0	0.0	unused 7	
0.0	0.0	0.0	0.0	0.0	0.0	0.0	unused 8	
0.0	0.0	0.0	0.0	0.0	0.0	0.0	unused 9	

BaseYear94 Direct Dollars by Program Element from MSC's ($'s in 000's)

IOC	ATCOM	CECOM	MICOM	TACOM	CBDCOM	TOTAL	1994	Description
0.0	3,250.0	964.0	3,308.0	8,963.0	0.0	16,485.0	421010.a	# of Short Tons Moved
0.0	500.0	0.0	0.0	0.0	0.0	500.0	421010.b	# of Watercraft Moved
0.0	650.0	0.0	0.0	0.0	0.0	650.0	421010.c	# of Flyaway Aircraft
0.0	300.0	0.0	0.0	0.0	0.0	300.0	421010.d	# of Aircraft Shipped
0.0	3,785.0	2,844.0	1,030.0	24,798.0	0.0	32,457.0	422120.a	# of Major Items Shipped/Received
0.0	0.0	0.0	3,653.0	0.0	0.0	3,653.0	422120.b	ST Ammo Shipped/Received
0.0	0.0	0.0	0.0	0.0	0.0	0.0	422120.c	ST Ammo Renovation
0.0	300.0	46.9	562.0	224.0	0.0	1,132.9	422121.1.a	Requisitions
0.0	0.0	0.0	0.0	0.0	0.0	0.0	422121.1.b	Density of Pacing Items Managed
0.0	3,451.0	2,886.1	1,294.0	11,040.0	0.0	18,671.1	422121.1.c	# of End Items Managed
0.0	9,364.0	5,766.8	5,950.7	18,578.0	596.8	40,256.3	422121.2.a	# of Active contracts ($25K or less)
0.0	7,064.0	9,819.2	11,051.3	6,728.0	2,387.1	37,049.6	422121.2.b	# of Active contracts (over $25K)
0.0	70,222.0	29,594.6	51,704.0	53,311.0	4,078.1	208,909.7	422121.3.a	# of Active Major Items Fielded
0.0	0.0	0.0	0.0	0.0	0.0	0.0	422121.3.b	# of Major Items Provisioned/New Flds
8,100.0	0.0	0.0	0.0	0.0	0.0	8,100.0	423005	# of Disposal Actions
0.0	17,424.0	5,186.3	6,459.0	9,721.0	2,381.7	41,172.0	423012.a	A Value (Log Management)
0.0		192.0	2,401.0	118.0	0.0	2,711.0	423012.b	# of Eaches Demil'ed
0.0	0.0	1,289.0	0.0	957.0	0.0	2,246.0	423611	# Auth Pop Incl Act Duty Mil/Contract
0.0	7,288.8	4,825.0	5,900.0	7,177.0	0.0	25,190.8	423612.a	# Auth Pop Incl Act Duty Mil/Contract
0.0	2,177.2	670.0	2,483.0	3,952.0	0.0	9,282.2	423612.b	# MIPS Used
0.0	0.0	0.0	0.0	0.0	0.0	0.0	423806	Acquisition Support to Project Manage
0.0	0.0	0.0	0.0	0.0	0.0	0.0	423829.a	# of Project Manager Offices
0.0	8,517.0	5,957.7	1,963.0	3,743.0	728.5	20,909.2	423829.b	# of Major Items Supported
0.0	0.0	229.2	284.0	0.0	0.0	513.2	423892	# Military Population Supported
179,489.0	0.0	0.0	0.0	0.0	0.0	179,489.0	424041.a	S/T Ammo Shipped/Received
68,682.0	0.0	0.0	0.0	0.0	0.0	68,682.0	424041.b	S/T Ammo Stored
0.0	0.0	0.0	0.0	0.0	0.0	0.0	424041.c	ST Ammo Renovation
0.0	0.0	0.0	0.0	0.0	0.0	0.0	422121.3	# of Students Trained
0.0	0.0	0.0	0.0	0.0	0.0	0.0	422121.3	# of Task Orders/Studies/Analysis
0.0	0.0	0.0	0.0	0.0	0.0	0.0	422121.3	# of TPS Support
0.0	0.0	0.0	0.0	0.0	36,219.0	36,219.0	425042	
0.0	0.0	0.0	0.0	0.0	0.0	0.0	unused 5	
0.0	0.0	0.0	0.0	0.0	0.0	0.0	unused 6	
0.0	0.0	0.0	0.0	0.0	0.0	0.0	unused 7	
0.0	0.0	0.0	0.0	0.0	0.0	0.0	unused 8	
0.0	0.0	0.0	0.0	0.0	0.0	0.0	unused 9	
256,271.0	134,293.0	70,270.8	98,043.0	149,310.0	46,391.2	754,579.0	**GRAND TOTALS**	

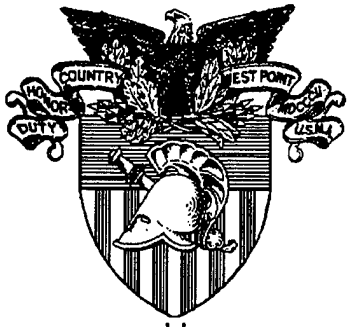
BaseYear94 Unit Cost Factors (BaseYear94 Dollars/BaseYear94 Workload)

IOC	ATCOM	CECOM	MICOM	TACOM	CBDCOM	1994	Description
0	500.0	87.6	202.2	43.4	0	421010.a	# of Short Tons Moved
0	14285.7	0	0	0	0	421010.b	# of Watercraft Moved
0	2166.7	0	0	0	0	421010.c	# of Flyaway Aircraft
0	1500.0	0	0	0	0	421010.d	# of Aircraft Shipped
0	43.6	6.1	38.4	13.2	0	422120.a	# of Major Items Shipped/Received
0	0	0	123.5	0	0	422120.b	ST Ammo Shipped/Received
0	0	0	0	0	0	422120.c	ST Ammo Renovation
0	13.6	1.2	70.4	3.9	0	422121.1.a	Requisitions
0	0	0	0	0	0	422121.1.b	Density of Pacing Items Managed
0	12.2	1.2	1.9	1.5	0	422121.1.c	# of End Items Managed
0	2859.2	0	1466.4	4659.6	11476.9	422121.2.a	# of Active contracts ($25K or less)
0	2856.4	2578.6	5176.3	6494.2	3589.6	422121.2.b	# of Active contracts (over $25K)
0	247.3	15.2	76.8	54.9	16782.3	422121.3.a	# of Active Major Items Fielded
0	0	0	0	0	0	422121.3.b	# of Major Items Provisioned/New Flds
84375.0	0	0	0	0	0	423005	# of Disposal Actions
0	17424000.0	5186300.0	6459000.0	9721000.0	2381700.0	423012.a	A Value (Log Management)
0	0	31.1	467.7	59.7	0	423012.b	# of Eaches Demil'ed
0	0	128.0	0	147.6	0	423611	# Auth Pop Incl Act Duty Mil/Contract
0	1457.8	554.7	387.4	514.6	0	423612.a	# Auth Pop Incl Act Duty Mil/Contract
0	167476.9	26800.0	20691.7	21955.6	0	423612.b	# MIPS Used
0	0	0	0	0	0	423806	Acquisition Support to Project Managers
0	0	0	0	0	0	423829.a	# of Project Manager Offices
0	3824.4	3677.6	7407.5	25993.1	45531.3	423829.b	# of Major Items Supported
0	0	104.1	116.2	0	0	423892	# Military Population Supported
301.4	0	0	0	0	0	424041.a	S/T Ammo Shipped/Received
230.4	0	0	0	0	0	424041.b	S/T Ammo Stored
0.0	0	0	0	0	0	424041.c	ST Ammo Renovation
0	0	0	0	0	0	422121.3	# of Students Trained
0	0	0	0	0	0	422121.3	# of Task Orders/Studies/Analysis
0	0	0	0	0	0	422121.3	# of TPS Support
0	0	0	0	0	267.6	425042	
0	0	0	0	0	0	unused 5	
0	0	0	0	0	0	unused 6	
0	0	0	0	0	0	unused 7	
0	0	0	0	0	0	unused 8	
0	0	0	0	0	0	unused 9	

APPENDIX B:

RAM USERS GUIDE

The RAM Users Guide is a stand alone document that provides users with the necessary information to install and run the Resource Allocation Model. The Users Guide walks the user through an illustrated session of RAM based on a series of Dialog and Edit Boxes that explain the available choices to the user for selecting the model to run the input values and format for the output of a "run".



United States Military Academy
West Point, New York 10096

U.S. Army Materiel Command Resource Allocation Model (RAM) USER GUIDE

March 1995

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TABLE OF CONTENTS

LIST OF FIGURES

1. POINT OF CONTACT

This manual describes the U.S. Army Materiel Command (AMC) Resource Allocation Model (RAM) and gives instructions for using the model. RAM is a decision support software system that allows the Army Materiel Command to carefully forecast, quickly analyze and efficiently allocate scarce resources in the form of OMA dollars to its major subordinate commands operations and maintenance requirements throughout the fiscal year. Questions about this manual or RAM should be directed to:

Operations Research Center
United States Military Academy
West Point, New York 10996

Commercial: (914) 938-5528
DSN: 688-5528
Fax: 688-5665

2. COMPUTER SOFTWARE AND HARDWARE REQUIREMENTS

RAM is a spreadsheet decision support model that requires Microsoft Excel version 4.0 or higher. The minimum computer system hardware requirements include a DOS-based computer, 386 processing chip, 4 megabytes (MB) of random access memory (RAM), monitor, and mouse.

3. INSTALLING THE MODEL ON THE COMPUTER HARD DRIVE

The model can be run from either an external disk drive or from the computer hard drive. However, we recommend the model be installed on the hard drive to improve the

efficiency of the model. The RAM consists of sixteen files that are stored on three floppy disks labeled Disk 1, Disk 2, and Disk 3. The contents of the disks, the files (filename) and a brief description of the files are given below.

Disk 1	RAMUSER.doc	Users Guide.
Disk 2	RAMTECH.doc	Technical Report.
Disk 3	macroram.xlm.	Contains macros that automate the Dialog Boxes, mathematical computations and processing functions of the RAM.
	ram951.xls	Model data for RAM
	iocomram.xls	Model data for IOCOM.
	tacomram.xls	Model data for TACOM
	cecomram.xls	Model data for CECOM
	atcomram.xls	Model data for ATCOM
	micomram.xls	Model data for MICOM
	cbdcomram.xls	Model data for CBDCOM
	macioc.xlm	IOCOM spreadsheet model.
	mactacom.xlm	TACOM spreadsheet model.
	maccecom.xlm	CECOM spreadsheet model.
	macatcom.xlm	ATCOM spreadsheet model..
	macmicom.xlm	MICOM spreadsheet model.
	maccbd.xlm	CBDCOM spreadsheet model.

The steps for installing RAM are as follows.

Step 1. Enter Microsoft FILE MANAGER.

Step 2. Create a directory on the C drive called WESTPOIN (e.g. C:\WESTPOIN).

Step 3. Insert Disk 1 into your external drive.

Step 4. Copy the files from Disk 1 to C:\WESTPOIN.

Step 5. Repeat steps 3-4 for remaining disks.

4. RUNNING THE MODEL

RAM is a self-contained model that does not require access to external programs (other than Excel) or data bases. There are at least two ways that RAM users may access the model: (1) from FILE MANAGER in Microsoft Windows, and (2) through Excel. The steps for running the model using these two methods are given below.

OPTION 1: Accessing RAM through Microsoft's FILE MANAGER.

Step 1. Enter FILE MANAGER.

Step 2. Using the mouse, select the directory C:\WESTPOIN by "clicking" on it once.

Step 3. Select the file **macroram.xlm** and "double click" on it to start the program.

OPTION 2: Accessing RAM through Excel.

Step 1. Start Microsoft Excel by "double clicking" on the Excel icon.

Step 2. Click on the File option.

Step 3. Click on the Open option.

Step 4. Select directory C:\WESTPOIN.

Step 5. Open the file **macroram.xlm** by "double clicking" on it.

5. ILLUSTRATED SESSION WITH RAM

At the beginning of each working session, a "Welcome" Dialog Box appears (see Figure 1). It gives useful information about RAM, such as the version number (e.g. 95.1 which stands for version 1 of year 1995) and the point of contact for model assistance.

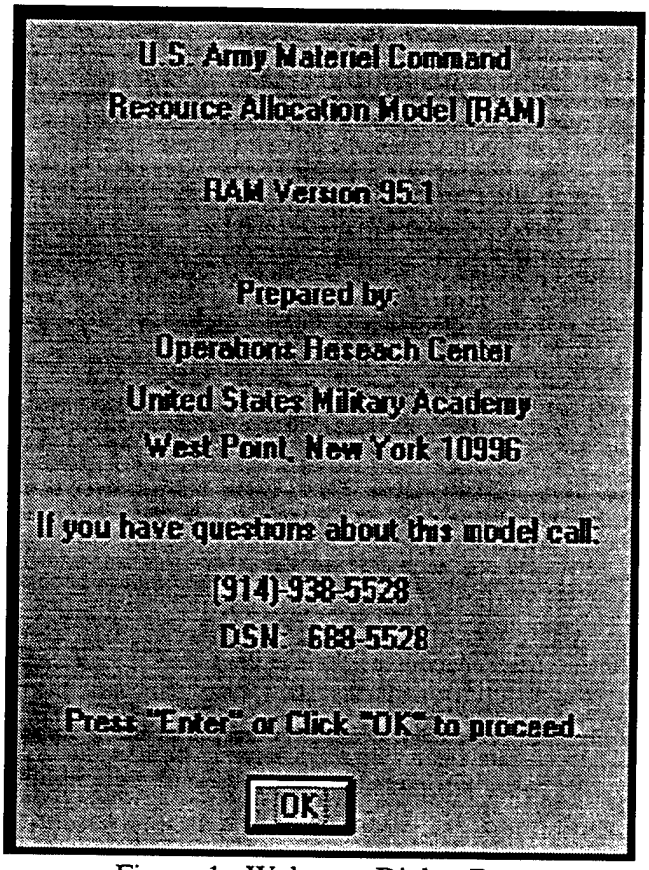


Figure 1. Welcome Dialog Box

To continue, "click" the "OK" button with the mouse or press the "Enter" key from the keyboard. Next, as shown in Figure 2, the user selects one of two types of Resource Allocation Models: (1) the aggregate RAM (RAM951) or (2) a Major Subordinate Command Model (MSC_RAM). The steps for accessing either the RAM951 Model or a Major Subordinate Command Model are the same. We will illustrate how to use RAM using the RAM951 spreadsheet. The main difference between RAM951 and a MSC_RAM Model is the size of the spreadsheet. MSC_RAM is a smaller version of RAM and only contains information and data associated with a specific MSC. Additional details for working with MSC_RAM files are given in Section 6.

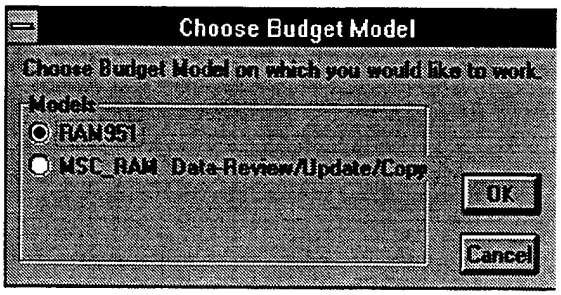


Figure 2. Dialog Box for Selecting a Model

After selecting a model, the user clicks on "OK" to continue. This opens the RAM951 Options Dialog Box shown in Figure 3. Through the RAM951 Options Dialog Box the user enters or edits Base-Year Workloads, Base-Year OMA Dollars, Forecast-Year Workload, Inflation Factors and Productivity Index Factors. It is important to note that only one of these options may be selected at a time.

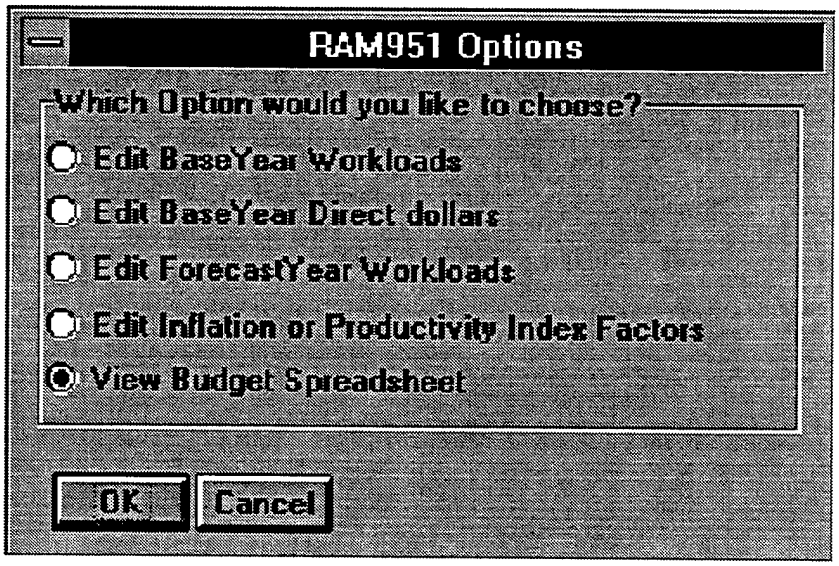


Figure 3. RAM951 Options Dialog Box

When one of the top three options are chosen in the RAM951 Options Dialog Box and clicks on "OK", the Choose MSC Dialog Box (Figure 4) is automatically called to the screen.. The user must then select the MSC to edit and click "OK".

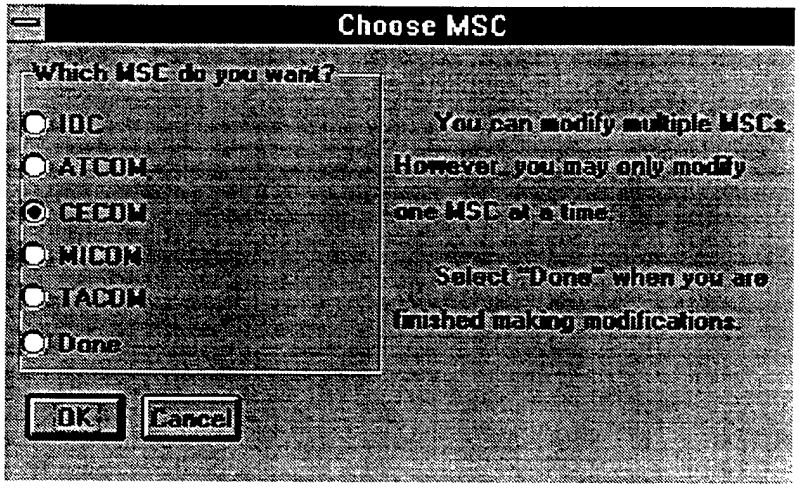


Figure 4. Choose MSC Dialog Box

Following the selection of a MSC, the model "walks" the user through three Dialog Boxes for editing data. These Dialog Boxes are illustrated in Figures 5.1, 5.2 and 5.3. Data is entered or edited from the keyboard. To move to the next line, use the "Tab" key. Click the "OK" button to move to the next Data Dialog Box. Click "Cancel" to display the previous Dialog Box. Once the third Dialog Box is completed, click "OK" to return to the "Choose MSC" Dialog Box (Figure 4). From there, the user can either edit a different MSC or choose "Done". When editing a different MSC, follow the same procedure described above. Selecting "Done" returns the user to the RAM 951 Options Dialog Box (see Figure 3).

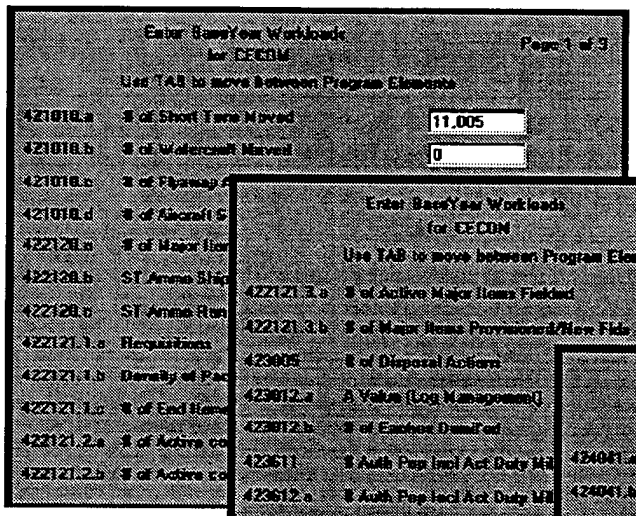


Figure 5.1

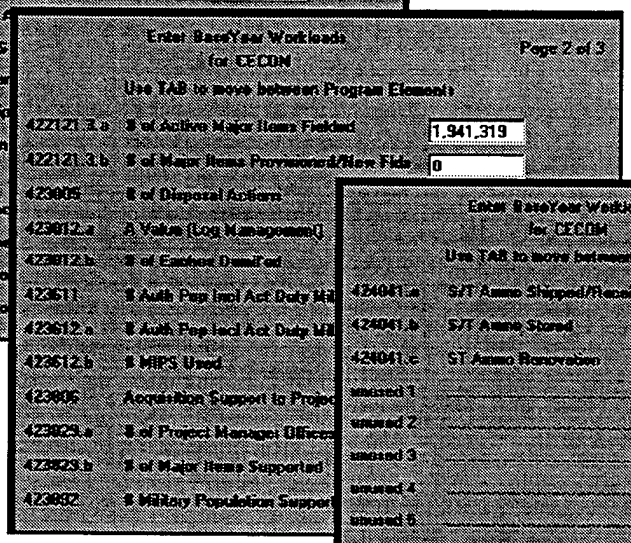


Figure 5.2

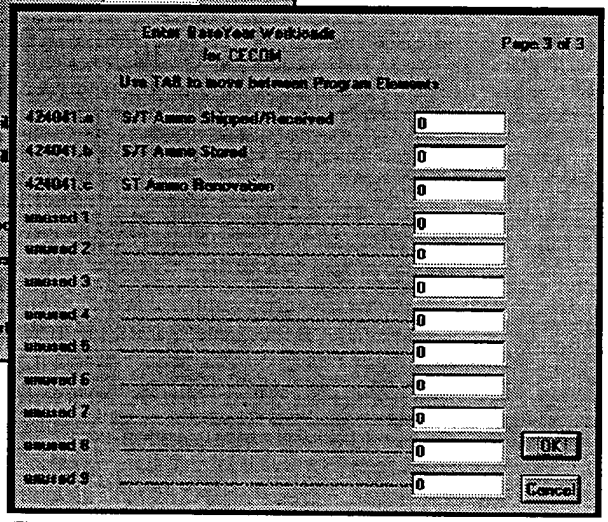


Figure 5.3

In addition to editing workload and dollar data by program element, the user can also edit the Inflation and Productivity Indexes from the 951 Options Dialog Box by clicking on the "Edit Inflation or Productivity Index Factors" option and then clicking on "OK". This takes the user to the Modify Indexes Dialog Box (Figure 6) where the user edits the indexes as appropriate. Once the editing is completed, click "OK" to return to the 951 Options Dialog Box (see Figure 3).

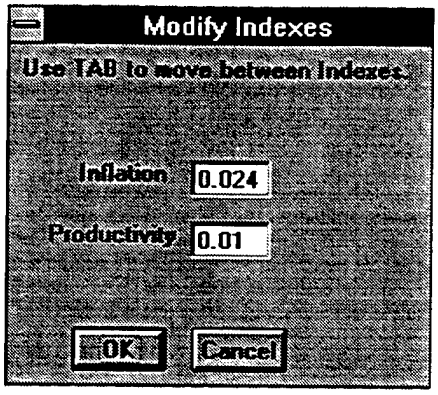


Figure 6. Modify Indexes

From the 951 Options Dialog Box, the user may view the spreadsheet by selecting the " View Budget Spreadsheet" option and clicking "OK". The When You Are Finished Dialog Box (Figure 7) is displayed informing the user of the availability to use a quick command keystroke, "Ctrl-p", to print, save or make another estimate at any time during the running of the model. Clicking the "OK" button will display the spreadsheet. A part of the first page of the spreadsheet can be seen in Figure 8.

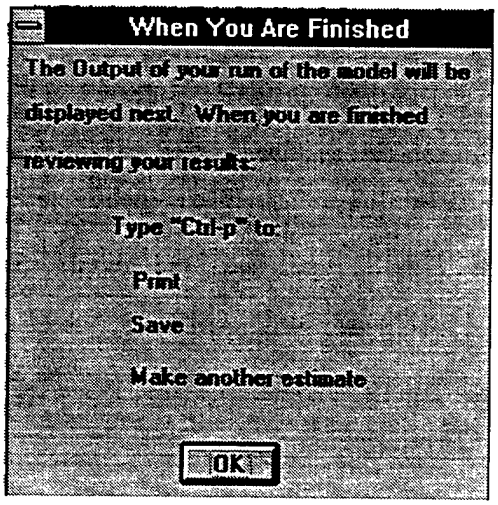
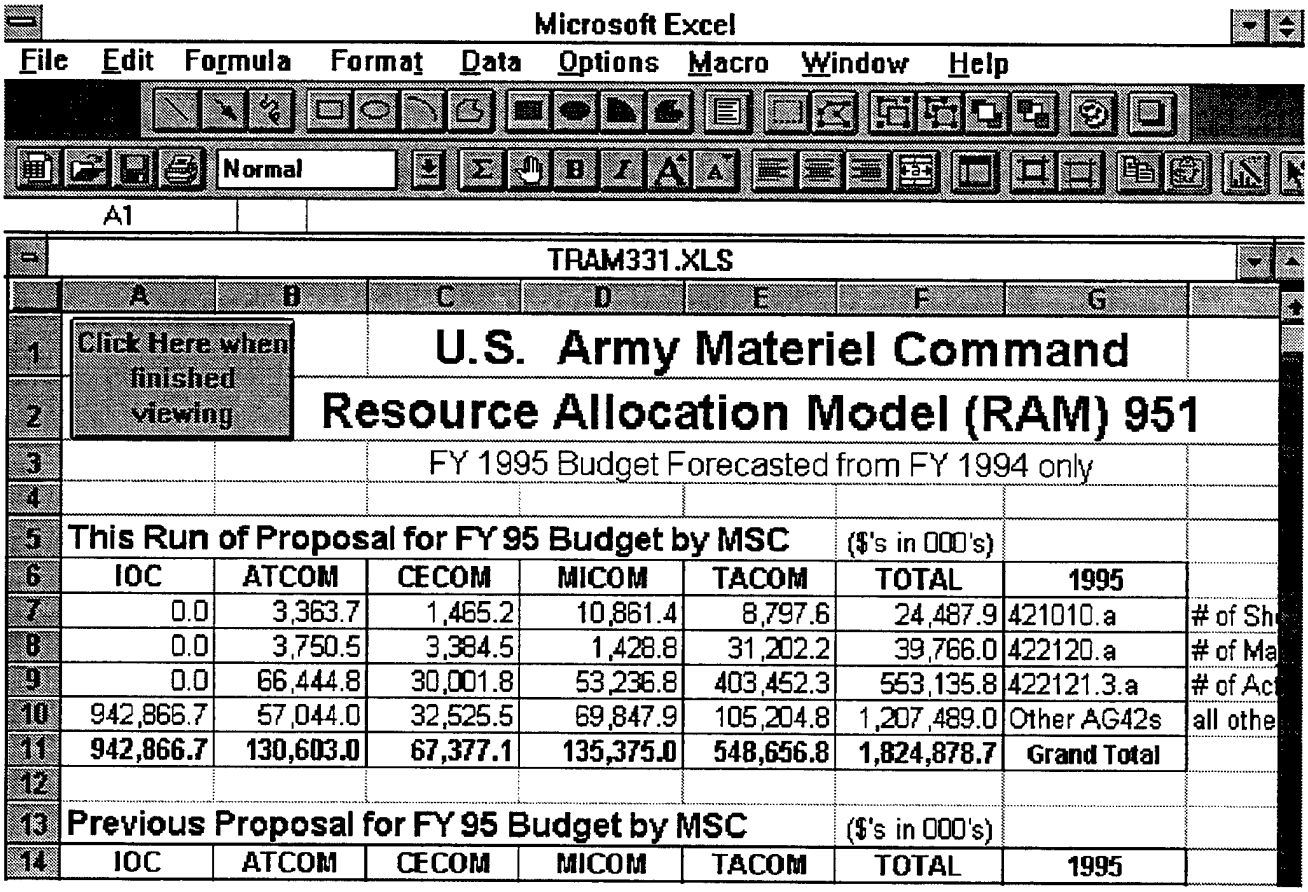


Figure 7. When You Are Finished Dialog Box

Figure 8 displays the top half of page 1 of the RAM output. The output is summarized by MSC and Program Element. The total OMA dollars required based on input from the user is located in cell F11. If no changes have been made to the input data by the user, the output data located in the section titled "This Run of Proposal for FY95 Budget by MSC" (see cells A6 through G11) will be identical to the section titled "Previous Proposal for FY95 Budget by MSC" (see cells A14 through G19). The three user requested OMA dollar Program Elements are shown in rows 7 through 9 and rows 15 through 17 with all other Program Elements summed in row 10 and row 18. The other RAM output includes graphs for each of the requested Program Elements, total OMA dollars required and tables of the input data.



5	This Run of Proposal for FY 95 Budget by MSC					($'s in 000's)		
6	IOC	ATCOM	CECOM	MICOM	TACOM	TOTAL	1995	
7	0.0	3,363.7	1,465.2	10,861.4	8,797.6	24,487.9	421010.a	# of Sh
8	0.0	3,750.5	3,384.5	1,428.8	31,202.2	39,766.0	422120.a	# of Ma
9	0.0	66,444.8	30,001.8	53,236.8	403,452.3	553,135.8	422121.3.a	# of Act
10	942,866.7	57,044.0	32,525.5	69,847.9	105,204.8	1,207,489.0	Other AG42s	all othe
11	**942,866.7**	**130,603.0**	**67,377.1**	**135,375.0**	**548,656.8**	**1,824,878.7**	**Grand Total**	
12								
13	Previous Proposal for FY 95 Budget by MSC					($'s in 000's)		
14	IOC	ATCOM	CECOM	MICOM	TACOM	TOTAL	1995	

Figure 8. Page 1 of Sample RAM Output

When finished viewing the spreadsheet, type "Ctrl-p", to print the output or click the "Click Here When Finished Viewing" button displayed in the upper left corner of the spreadsheet to display the Choose Options Dialog Box (Figure 9).

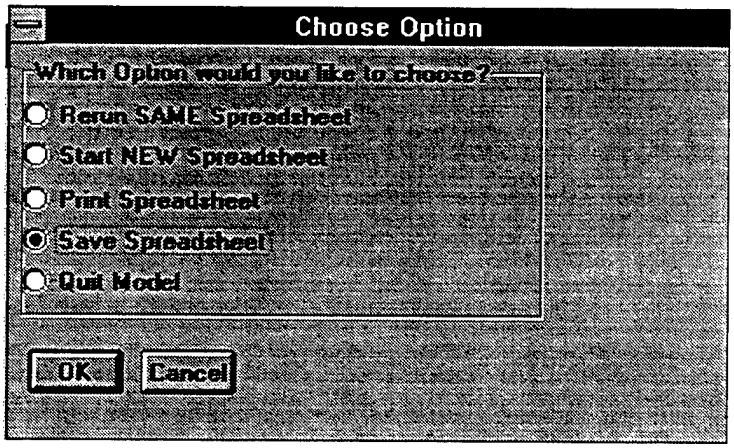


Figure 9. Choose Option Dialog Box

To continue to edit the current RAM spreadsheet, select "Rerun Same Spreadsheet" and click "OK". To start another RAM model run, select "Start New Spreadsheet" and click "OK". To print or save the current spreadsheet, select "Save Spreadsheet" and click "OK". The MSC Edit Save Options Dialog Box (Figure 10) is displayed with options for saving the file.

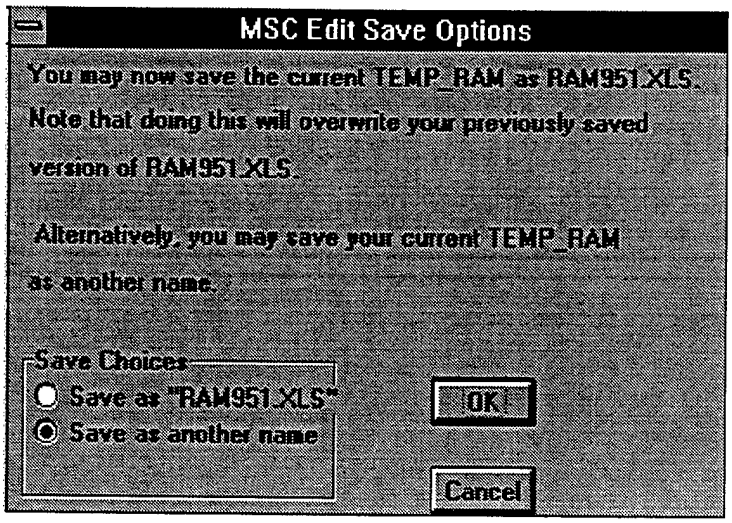


Figure 10. Save Option Dialog Box

The user may choose to save the current file (TEMP_RAM) as RAM951.XLS or save the file as another name. Selecting the first option will overwrite the existing RAM951.XLS with the current file. If the second option is selected, the "Save Spreadsheet" (Figure 11) is presented. The user may choose any name for the file, however the name may not begin with the letters "TMP." (Note: RAM automatically deletes any spreadsheet in the "C:\WESTPOIN" directory that has "TMP" as the first three letters to prevent saving "temporary" files on the computer hard drive.

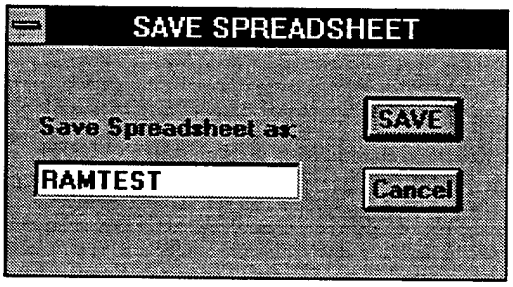


Figure 11. Save Spreadsheet Dialog Box

To end the current session, select "Quit Model" from the Choose Option Dialog Box (see Figure 9). This closes both the RAM and the Excel program.

6. ILLUSTRATED SESSION WITH MSC_RAM

As mentioned in Section 5, the user has two choices when viewing the Choose Budget Model Dialog Box (see Figure 2). Selecting the second option, "MSC_RAM Data-Review" presents the user with the Choose MSC RAM Dialog Box (Figure 12) allowing the user to choose which MSC RAM file to open.

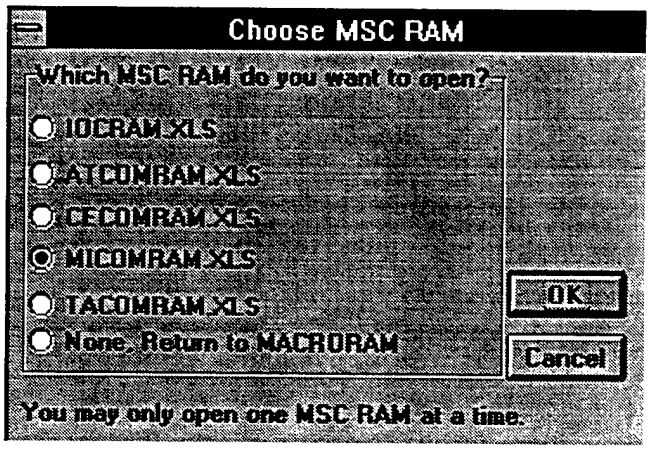


Figure 12. Choose MSC_RAM Dialog Box

After selecting a MSC to edit, the user clicks "OK" to continue. This displays the Edit Options Dialog Box shown in Figure 13. The user may edit either Base-Year Workloads, Base-Year OMA Dollars, Forecast-Year Workload, Inflation Factors, Productivity Index Factors, or Copy a complete MSC_RAM to the RAM 951 model and return to choose a different MSC_RAM.

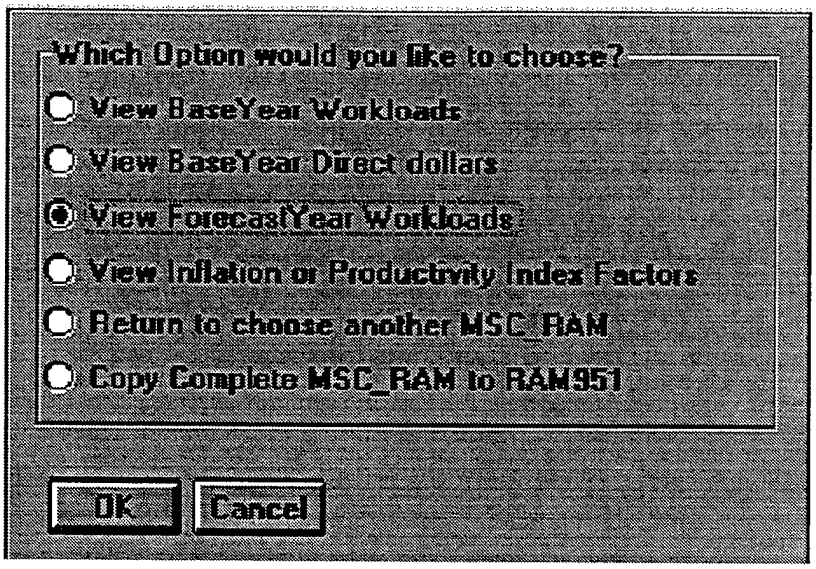


Figure 13. Edit Options Dialog Box

As with the RAM951, when the user selects one of the top three options in Figure 13 and clicks "OK", the model "walks" the user through three Dialog boxes for editing data. (Figure 14). These Dialog Boxes are similar to the RAM 951 Dialog Boxes for editing data and user editing is completed using the same procedure. The MSC column in the Data Dialog Boxes displays the current information contained under each program element in RAM951 which was forwarded from the separate MSC's Resources Allocation Model. Click the "OK" button to move to the next Data Dialog Box. Select "Cancel" to display the previous Data Dialog Box. Once the third Data Dialog Box is completed, click "OK" to return to the Edit Options Dialog Box (see Figure 13). The user can also edit the Inflation and Productivity Indexes which takes the user to the MSC Indexes Dialog Box (see Figure 15).

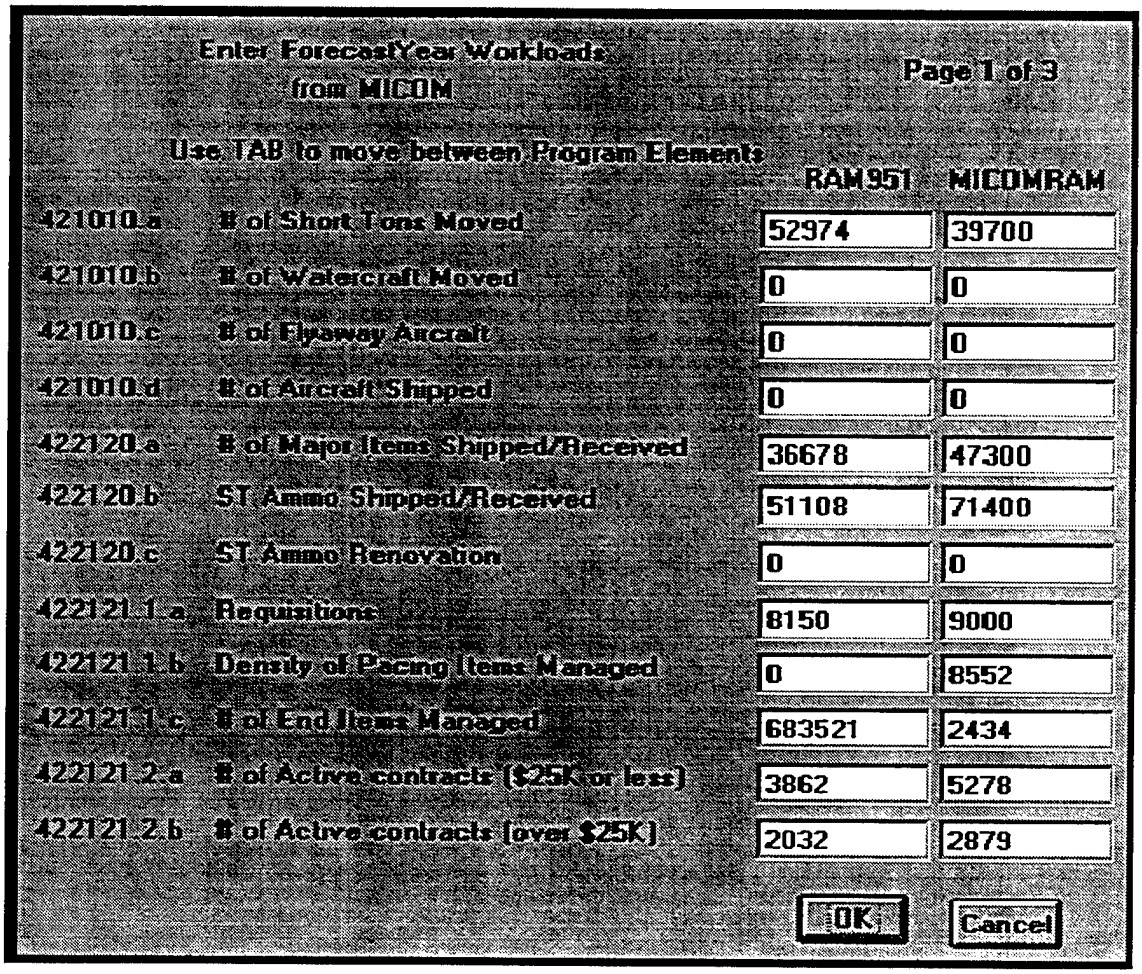


Figure 14. Sample Edit Dialog Box for MSC_RAM

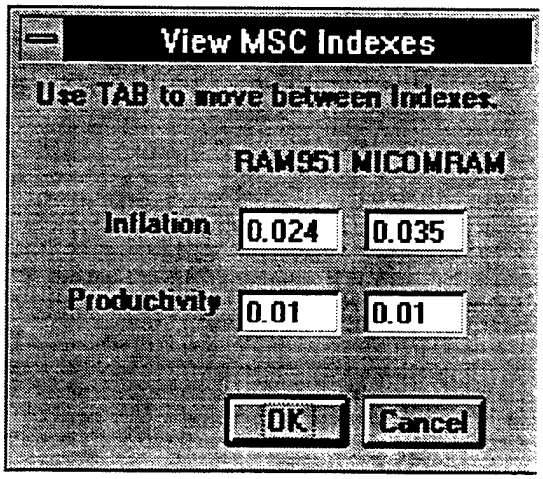


Figure 15. Edit Indexes Dialog Box

From the Edit Options Dialog Box, (Figure 13) the user can either continue to edit the current MSC, choose a different MSC to edit, or copy the data to the RAM 951 model. If the user chooses to edit a different MSC, follow the same procedure described above. Selecting to edit a different MSC returns the user to the Choose MSC RAM Dialog Box (see Figure 12).

To view the results of editing, the user selects Copy Complete MSC_RAM to RAM951 and clicks "OK". This selection will present the results of the model to the user in the spreadsheet (see Figure 8). The remaining dialog instructions follow the same sequence discussed in the Sample RAM Session above.

APPENDIX C:

RAM SYSTEM TESTING DATES AND USER INTERVIEWS

This appendix provides the RAM system site testing dates and the list of users which contributed to the development of the model.

MSC	POC	PHONE NUMBER (DSN)	WORKLOAD VALIDATION DATES
IOCOM	Laura Duncheon	793-2019	3-4 Feb 94
ATCOM	Jan Schager	693-1408	31 Jan-1 Feb 94
CECOM	Joe Baker	992-4922	25-26 Jan 94
	Bill Mocci		
MICOM	Jean Anderson	746-5134	7-8 Feb 94
TACOM	Carol Luffburrow	786-5092	10-11 Feb 94

APPENDIX D:

MACRO CODE

Appendix D provides the macro code for the Resource Allocation Model. The file containing the macro code is **macroram.xlm**. The cell range for the code is A1:W225. The code is divided into several sub-routines which operate specific user chosen functions such as printing, saving, copying and editing the model. Appropriate comment lines are found next to the code to explain the specific function which the code performs.

	A	B	C	D	E	F	G	H	I	J
1	**Auto_Open (o)**	**Comments**						**Dialog Boxes**		
2	C:\westpoin	*Directory in which both RAM951.XLS*	item	X	Y	W	H	**Text**	**Initial**	**Comments**
3		*and MACRORAM.XLM need to be*								
4		*in.*						**Welcome Box**		
5	Model developed by MAJ James L. Watson, Jr. and			139	15	356	293			
6	MAJ Mike Barbero of the Operations Research		5	48	24			Resource Allocation Model (RAM)		
7	Center (ORCEN), United States Military Academy		5	65	6			U.S. Army Materiel Command		
8	West Point, New York 10996		5	103	54			RAM Version 95.1		
9		*Calls opening Dialog Box to welcome*	5	124	90			Prepared by:		
10	**=DIALOG.BOX(Welcome)**	*user,display Configuration Managment.*	5	77	110			Operations Reseach Center		
11		*This is Version 95.1.*	5	61	127			United States Military Academy		
12			5	72	144			West Point, New York 10996		
13	MACRORAM.XLM	MACRO	5	112	194			(914)-938-5528		
14	TRAM576.xls	TEMPRAM	5							
15	TMSC041.xls	TEMPMSC	1	133	266	64		OK		
16			5	117	210			DSN: 688-5528		
17			5	28	240			Press "Enter" or Click "OK" to proceed.		
18	**Entry Point B**	*Entry point to start new Spreadsheet.*	5	10	173			If you have questions about this model call:		
19										
20	**Choose Model (RAM or MSC_RAM)**							**Choose_Budget_Model**		
21	**=DIALOG.BOX(Choose_Budget_Model)**	*User chooses type of model*		119	57	442	121	Choose Budget Model		
22	=IF(A21=FALSE,RETURN())		14	9	24	329	89	Models		
23			11						1	Model
24	**Open RAM951.XLS and Save as TEMPRAM**	*Opens temporary copy of RAM951.XLS*	12					RAM951		
25	=ECHO(FALSE)	*to keep it from being accidentally*	12					MSC_RAM Data-Review/Update/Copy		
26	=DIRECTORY(A2)	*overwritten*	1	365	64	64		OK		
27	=LEFT(RIGHT(NOW(),7),3)		2	364	94	64		Cancel		
28	=ACTIVATE(MACRO)		5	11	6			Choose Budget Model on which you would like to work.		
29	=SELECT(TEMPRAM)									
30	=FORMULA("TRAM"&A27&".xls")									
31	=OPEN("RAM951.XLS")							**Choose_RAM951_Options**		
32	=SAVE.AS(TEMPRAM)			122	51	418	173	RAM951 Options		
33	=PROTECT.DOCUMENT?(FALSE,FALSE,,FALSE)		14	10	6	397	124	Which Option would you like to choose?		
34	=SELECT(!Proposal_This_Run)		11						5	Option_941
35	=COPY()		12	13	24			Edit BaseYear Workloads		
36	=SELECT(!Proposal_Previous)		12	13	44			Edit BaseYear Direct dollars		
37	=PASTE.SPECIAL(3,1,FALSE,FALSE)		12	13	64			Edit ForecastYear Workloads		
38	=IF(Model=2,GOTO(MSC_RAM_EDIT))		12	13	84			Edit Inflation or Productivity Index Factors		
39			12	13	104			Done, View Budget Spreadsheet		
40	**Entry Point A**	*Entry point to rerun same Spreadsheet.*	1	17	146			OK		
41		=ECHO(FALSE)	2	92	146			Cancel		
42	**=DIALOG.BOX(Choose_RAM951_Options)**									
43	=IF(A42=FALSE,GOTO(A21))									
44	=IF(Option_941=5,GOTO(Terminate))							**Choose MSC**		
45				102	47	515	220	Choose MSC		
46			14	5	5	235	171	Which MSC do you want?		
47	**Edit Indexes**		11						7	msc
48	=IF(Option_941=4)	*User chooses to change Inflation or Prod. in*	12	10	30	128		IOC		
49	= ACTIVATE(TEMPRAM)	*Activates TEMPRAM spreadsheet.*	12	10	50	134		ATCOM		
50	= SELECT(!RAM_Indexes)	*Selects indexes cell block.*	12	10	70	140		CECOM		
51	= COPY()	*Copies indexes cell block.*	12	10	90			MICOM		
52	= ACTIVATE(MACRO)	*Activates this Macro.*	12	10	110			TACOM		
53	= SELECT(MACRO_Indexes)	*Selects indexes cell block on Macro.*	12	10	130	133		CBDCOM		
54	= PASTE.SPECIAL(3,1,FALSE,FALSE)	*Pastes index data copied from TEMPRAM t*	12	10	150			Done		
55	= **DIALOG.BOX(Change_Indexes)**	*Dialog Box to let user edit index data.*	1	9	186	64		OK		
56	= IF(A55=FALSE,GOTO(Entry_Point_A))	*Sends user back if "Cancel" is clicked.*	2	88	186	64		Cancel		
57	= SELECT(MACRO_Indexes)	*Selects indexes cell block on Macro.*	5	275	30			You can modify multiple MSCs.		
58	= COPY()	*Copies indexes cell block.*	5	250	50			However, you may only modify		
59	= ACTIVATE(TEMPRAM)	*Activates TEMPRAM spreadsheet.*	5	250	70			one MSC at a time.		
60	= SELECT(!RAM_Indexes)	*Selects indexes cell block.*	5	275	100			Select "Done" when you are		
61	= PASTE.SPECIAL(3,1,FALSE,FALSE)	*Pastes index data copied from Macro to TE*	5	250	120			finished making modifications.		
62	= GOTO(Entry_Point_A)	*After changing indexes, go back to*								
63	=END.IF()	*"Choose Option" menu.*						**When Finished**		
64				135	33	350	225	When You Are Finished		
65			5	73	84	135	23	`Type "Ctrl-p" to:`		
66	**Choose The MSC Data To Edit**		5	89	111			Print		
67	**=DIALOG.BOX(Choose_MSC)**	*Standard Situation. User chooses to*	5	88	134			Save		
68	=IF(OR(A67=FALSE,msc=7),GOTO(Entry_Point_A))	*modify workloads or Dollars for PE's.*	5	87	159			Make another estimate		
69			1	125	198			OK		
70	=IF(msc=1,(FORMULA("IOC",Edit_MSC1)),IF(msc=2,F(	*Pastes Applicable MSC name into*	5	10	6			The Output of your run of the model will be		
71	=IF(msc=1,(FORMULA("IOC",Edit_MSC2)),IF(msc=2,F(	*Edit dialog boxes.*	5	10	29			displayed next. When you are finished		
72	=IF(msc=1,(FORMULA("IOC",Edit_MSC3)),IF(msc=2,F(		5	10	52			reviewing your results:		
73	=ACTIVATE(TEMPRAM)									
74								**Save_Print_Rerun_Quit**		
75	**Copy/Paste and edit MSC data**			102	48	482	190	Choose Option		
76	=IF(Option_941=1)		14	7	7	354	124	Which Option would you like to choose?		
77	= AND(FORMULA("BaseYear Workloads",Edit_Optio		11						5	Where_Now?
78	= IF(msc=1,SELECT(!AMCCOM_BaseWork1),IF(msc	*Nested if() functions that selects*	12	10	27	250		Rerun SAME Spreadsheet		
79	=ELSE.IF(Option_941=2)	*correct block of data off of RAM*	12	10	47	250		Start NEW Spreadsheet		
80	= AND(FORMULA("BaseYear Dollars",Edit_Option1),	*based upon user'schoice of MSC.*	12	10	67	250		Print Spreadsheet		
81	= IF(msc=1,SELECT(!AMCCOM_BaseDollar1),IF(ms		12	10	87			Save Spreadsheet		
82	=ELSE.IF(Option_941=3)		12	10	107			Quit Model		
83	= AND(FORMULA("ForecastYear Workloads",Edit_O		1	14	147	64		OK		

	A	B	C	D	E	F	G	H	I	J
84	= IF(msc=1,SELECT(!AMCCOM_ForeWork1),IF(msc		2	89	147	64		Cancel		
85	=END.IF()									
86								**Save_As_RAM951**		
87	=COPY()			99	42	487	203	MSC Edit Save Options		
88	=ACTIVATE(MACRO)		5	12	6			You may now save the current TEMP_RAM as RAM951.XL		
89	=SELECT(!PE_Edit_Boxes_1)		5	12	26			Note that doing this will overwrite your previously saved		
90	=PASTE.SPECIAL(3,1,FALSE,FALSE)		5	12	46			version of RAM951.XLS.		
91	**=DIALOG.BOX(Edit_Work_Dollars_1)**	*Dialog Box to edit workload or dollar*	5	12	76			Alternatively, you may save your current TEMP_RAM		
92	=IF(A91=FALSE,GOTO(A67))	*data by MSC and PE.*	5	12	96			as another name.		
93	=SELECT(!PE_Edit_Boxes_1)		14	10	130	215	67	Save Choices		
94	=COPY()		11						2	Save_Choice
95	=ACTIVATE(TEMPRAM)		12					Save as "RAM951.XLS"		
96	=IF(Option_941=1)		12					Save as another name		
97	= IF(msc=1,SELECT(!AMCCOM_BaseWork1),IF(msc	*This section of if/elses selects the*	1	288	143			OK		
98	=ELSE.IF(Option_941=2)	*correct data area on MACRORAM.XLM*	2	287	181			Cancel		
99	= IF(msc=1,SELECT(!AMCCOM_BaseDollar1),IF(ms	*to be used (pasted) from the dialog box*								
100	=ELSE.IF(Option_941=3)	*that edits the workload or dollar data.*						**SAVE**		
101	= IF(msc=1,SELECT(!AMCCOM_ForeWork1),IF(msc			146	62	320	107	SAVE SPREADSHEET		
102	=END.IF()		5	19	31			Save Spreadsheet as:		
103	=PASTE.SPECIAL(3,1,FALSE,FALSE)		6	17	54	171			RAMTES	Save_As_Name
104			1	227	22	64		SAVE		
105	=IF(Option_941=1)	*This section of if/elses selects the*	2	227	55	64		Cancel		
106	= IF(msc=1,SELECT(!AMCCOM_BaseWork2),IF(msc	*correct data off of RAM to be used*								
107	=ELSE.IF(Option_941=2)	*by dialog box to edit the 2ND PE*								
108	= IF(msc=1,SELECT(!AMCCOM_BaseDollar2),IF(ms	*workload or dollar data.*						**Change Indexes**		
109	=ELSE.IF(Option_941=3)			160	54			Modify Indexes		
110	= IF(msc=1,SELECT(!AMCCOM_ForeWork2),IF(msc		5	10	6			Use TAB to move between Indexes.		
111	=END.IF()		5	49	56			Inflation		
112	=COPY()		5	27	86			Productivity		
113	=ACTIVATE(MACRO)		8	127	56	55			0.024	INDEXES
114	=SELECT(!PE_Edit_Boxes_2)		8	127	86	55			0.01	
115	=PASTE.SPECIAL(3,1,FALSE,FALSE)		1	45	136	65		OK		
116	**=DIALOG.BOX(Edit_Work_Dollars_2)**		2	129	136	65		Cancel		
117	=IF(A116=FALSE,GOTO(A91))									
118	=SELECT(!PE_Edit_Boxes_2)							**Edit Workloads 1**		
119	=COPY()									
120	=ACTIVATE(TEMPRAM)		5	9	71			421010.a		
121	=IF(Option_941=1)	*This section of if/elses selects the*	5	9	95			421010.b		
122	= IF(msc=1,SELECT(!AMCCOM_BaseWork2),IF(msc	*correct data area on MACRORAM.XLM*	5	9	118			421010.c		
123	=ELSE.IF(Option_941=2)	*to be used pasted from the dialog box*	5	9	142			421010.d		
124	= IF(msc=1,SELECT(!AMCCOM_BaseDollar2),IF(ms	*that edits the workload or dollar data.*	5	9	165			422120.a		
125	=ELSE.IF(Option_941=3)		5	9	189			422120.b		
126	= IF(msc=1,SELECT(!AMCCOM_ForeWork2),IF(msc		5	9	213			422120.c		
127	=END.IF()		5	9	236			422121.1.a		
128	=PASTE.SPECIAL(3,1,FALSE,FALSE)		5	9	260			422121.1.b		
129			5	9	284			422121.1.c		
130	=IF(Option_941=1)		5	9	307			422121.2.a		
131	= IF(msc=1,SELECT(!AMCCOM_BaseWork3),IF(msc	*This section of if/elses selects the*	5	9	331			422121.2.b		
132	=ELSE.IF(Option_941=2)	*correct data off of RAM to be used*	5	112	71			# of Short Tons Moved		
133	= IF(msc=1,SELECT(!AMCCOM_BaseDollar3),IF(ms	*by dialog box to edit the 3RD PE*	5	112	95			# of Watercraft Moved		
134	=ELSE.IF(Option_941=3)	*workload or dollar data.*	5	112	118			# of Flyaway Aircraft		
135	= IF(msc=1,SELECT(!AMCCOM_ForeWork3),IF(msc		5	112	142			# of Aircraft Shipped		
136	=END.IF()		5	112	165			# of Major Items Shipped/Received		
137	=COPY()		5	112	189			ST Ammo Shipped/Received		
138	=ACTIVATE(MACRO)		5	112	213			ST Ammo Renovation		
139	=SELECT(!PE_Edit_Boxes_3)		5	112	236			Requisitions		
140	=PASTE.SPECIAL(3,1,FALSE,FALSE)		5	112	260			Density of Pacing Items Managed		
141	**=DIALOG.BOX(Edit_Work_Dollars_3)**		5	112	284			# of End Items Managed		
142	=IF(A141=FALSE,GOTO(A116))		5	112	307			# of Active contracts ($25K or less)		
143	=SELECT(!PE_Edit_Boxes_3)		5	112	331			# of Active contracts (over $25K)		
144	=COPY()		8	423	71	100			0	PE_Edit_Boxes_
145	=ACTIVATE(TEMPRAM)		8	423	95	100			0	
146	=IF(Option_941=1)		8	423	118	100			0	
147	= IF(msc=1,SELECT(!AMCCOM_BaseWork3),IF(msc		8	423	142	100			0	
148	=ELSE.IF(Option_941=2)		8	423	165	100			0	
149	= IF(msc=1,SELECT(!AMCCOM_BaseDollar3),IF(ms		8	423	189	100			0	
150	=ELSE.IF(Option_941=3)		8	423	213	100			0	
151	= IF(msc=1,SELECT(!AMCCOM_ForeWork3),IF(msc		8	423	236	100			0	
152	=END.IF()		8	423	260	100			0	
153	=PASTE.SPECIAL(3,1,FALSE,FALSE)		8	423	284	100			0	
154			8	423	307	100			49	
155	=GOTO(A67)	*Go back to Choose_MSC after last*	8	423	331	100			698	
156		*edit box*	5	133	9			Enter		
157			5	226	25			IOC		
158	[redacted]		5	197	25			for		
159	=IF(INFO("system")="mac",FORMULA("Type ""~Optior		5	181	9			ForecastYear Workloads		
160	**=DIALOG.BOX(When_Finished)**		1	542	301	64		OK		
161	=ACTIVATE(TEMPRAM)		2	542	333	64		Cancel		
162	=SELECT(!HOME)		5	109	45			Use TAB to move between Program Elements		
163	=RETURN()		5	518	15			Page 1 of 3		
164										
165								**Edit Workloads 2**		
166	**Record1 (p)**									
167	**=DIALOG.BOX(Save_Print_Rerun_Quit)**		5	9	71			422121.3.a		
168	=IF(A167=FALSE,GOTO(Entry_Point_A))		5	9	95			422121.3.b		
169			5	9	118			423005		
170	=IF(Where_Now=1)		5	9	142			423012.a		

	A	B	C	D	E	F	G	H	I	J
171	= GOTO(Entry_Point_A)		5	9	165			423012.b		
172	=ELSE.IF(Where_Now=2)		5	9	189			423611		
173	= GOTO(Entry_Point_B)		5	9	213			423612.a		
174	=ELSE.IF(Where_Now=3)		5	9	236			423612.b		
175	= ACTIVATE(TEMPRAM)		5	9	260			423806		
176	= SELECT(!RAM_Printarea)		5	9	284			423829.a		
177	= PRINT()		5	9	307			423829.b		
178			5	9	331			423892		
179	=ELSE.IF(Where_Now=4)		5	112	71			# of Active Major Items Fielded		
180	= **DIALOG.BOX(Save_As_RAM941)**	*Dialog Box allows user to choose the*	5	112	95			# of Major Items Provisioned/New Flds		
181	= IF(A180=FALSE,GOTO(A167))	*name for the TEMPRAM of this run.*	5	112	118			# of Disposal Actions		
182			5	112	142			A Value (Log Management)		
183	= IF(Save_Choice=1)	*Saves TEMPRAM as RAM951.XLS*	5	112	165			# of Eaches Demil'ed		
184	= ACTIVATE(TEMPRAM)		5	112	189			# Auth Pop Incl Act Duty Mil/Contract		
185	= SELECT(!HOME)		5	112	213			# Auth Pop Incl Act Duty Mil/Contract		
186	= PROTECT.DOCUMENT(TRUE,FALSE.,TRUE)		5	112	236			# MIPS Used		
187	= SAVE.AS("RAM951.XLS",1,"",FALSE,"",FALSE)		5	112	260			Acquisition Support to Project Managers		
188	= ELSE.IF(Save_Choice=2)	*Allows user to choose name to save*	5	112	284			# of Project Manager Offices		
189	= FORMULA("RAMTEST",Save_As_Name)	*TEMPRAM as.*	5	112	307			# of Major Items Supported		
190	= **DIALOG.BOX(Save_As)**		5	112	331			# Military Population Supported		
191	= IF(A190=FALSE,GOTO(A180))		8	423	71	100			258	PE_Edit_Boxes_2
192	= IF(RIGHT(Save_As_Name,4)=".xls")		8	423	95	100			0	
193	= FORMULA(Save_As_Name,TEMPRAM)		8	423	118	100			0	
194	= SAVE.AS(TEMPRAM)		8	423	142	100			1	
195	= ELSE()		8	423	165	100			0	
196	= FORMULA(Save_As_Name&".xls",TEMPRAM		8	423	189	100			0	
197	= SAVE.AS(TEMPRAM)		8	423	213	100			0	
198	= END.IF()		8	423	236	100			0	
199	= END.IF()		8	423	260	100			0	
200			8	423	284	100			0	
201	=ELSE()		8	423	307	100			15	
202	= CLOSE(FALSE)		8	423	331	100			0	
203	= GOTO(Auto_Close_Del__d)	*Auto_Close scans through the directory*	5	133	9			Enter		
204	=END.IF()	*that MACRORAM.XLM and RAM951.XL*	5	226	25			IOC		
205	=GOTO(A167)	*reside to eliminate any TRAM's and*	5	197	25			for		
206		*TMSC's that have been created during*	5	181	9			ForecastYear Workloads		
207		*the run. Auto_Close is located at cell*	1	542	301	64		OK		
208		*(K1).*	2	542	333	64		Cancel		
209			5	109	45			Use TAB to move between Program Elements		
210			5	518	15			Page 2 of 3		
211										
212								**Edit Workloads 3**		
213										
214			5	9	71			424041.a		
215			5	9	95			424041.b		
216			5	9	118			424041.c		
217			5	9	142			422121.3		
218			5	9	165			422121.3		
219			5	9	189			422121.3		
220			5	9	213			425042		
221			5	9	236			unused 5		
222			5	9	260			unused 6		
223			5	9	284			unused 7		
224			5	9	307			unused 8		
225			5	9	331			unused 9		
226			5	112	71			S/T Ammo Shipped/Received		
227			5	112	95			S/T Ammo Stored		
228			5	112	118			ST Ammo Renovation		
229			5	112	142			# of Students Trained		
230			5	112	165			# of Task Orders/Studies/Analysis Perf		
231			5	112	189			# of TPS Support		
232			5	112	213			.....		
233			5	112	236			.....		
234			5	112	260			.....		
235			5	112	284			.....		
236			5	112	307			.....		
237			5	112	331			.....		
238			8	423	71	100			0	PE_Edit_Boxes_3
239			8	423	95	100			0	
240			8	423	118	100			0	
241			8	423	142	100			0	
242			8	423	165	100			0	
243			8	423	189	100			0	
244			8	423	213	100			135336	
245			8	423	236	100			0	
246			8	423	260	100			0	
247			8	423	284	100			0	
248			8	423	307	100			0	
249			8	423	331	100			0	
250			5	133	9			Enter		
251			5	226	25			IOC		
252			5	197	25			for		
253			5	181	9			ForecastYear Workloads		
254			1	542	301	64		OK		
255			2	542	333	64		Cancel		
256			5	109	45			Use TAB to move between Program Elements		
257			5	518	15			Page 3 of 3		

	K	L	M	N
1	**Auto_Close_Del (d)**	*Auto_Close scans through the*	**MSC_RAM_EDIT**	*This Section allows user to view the chosen*
2	=DIRECTORY(A2)	*directory that MACRORAM.XLM*		*MSC-RAM and edit TEMPRAM as appropriate.*
3	=ECHO(FALSE)	*and RAM951.XLS reside to*	**=DIALOG.BOX(Choose_MSC_RAM)**	
4	i=1	*eliminate any TRAM's and TMSC's*	=IF(OR(M3=FALSE,msc_ram=7),GOTO(Entry_Point_A	
5	=WHILE(COLUMNS(DOCUMENTS())>1)	*that have been created during the r*		
6	=ACTIVATE(INDEX(DOCUMENTS(),i))	*Auto_Close is located at cell (K1).*	=IF(msc_ram=1,(FORMULA("IOC",View_MSC_1)),IF(r	*This section of nested "ifs" pasted the*
7	=IF(INDEX(DOCUMENTS(),i)=MACRO)		=IF(msc_ram=1,(FORMULA("IOC",View_MSC_2)),IF(r	*appropriate MSC name into the View Dialog*
8	i=i+1		=IF(msc_ram=1,(FORMULA("IOC",View_MSC_3)),IF(r	*Boxes.*
9	=SAVE()			
10	=ELSE.IF(OR(LEFT(INDEX(DOCUMENTS(),i),4)="T		=IF(msc_ram=1,(FORMULA("IOCRAM",View_MSC_R/	
11	=CLOSE(FALSE)		=IF(msc_ram=1,(FORMULA("IOCRAM",View_MSC_R/	
12	=ELSE()		=IF(msc_ram=1,(FORMULA("IOCRAM",View_MSC_R/	
13	=CLOSE(TRUE)		=IF(msc_ram=1,(FORMULA("IOCRAM",View_Indexes	
14				
15	=END.IF()			
16	=NEXT()		**Open Chosen MSCRAM,**	*Opens appropriate MSC-RAM, and saves it*
17	i=1		**Save as TEMPMSC**	*as TEMPMSC*
18	=WHILE(ISERROR(INDEX(FILES(),i))=FALSE)		=ECHO(FALSE)	
19	=IF(INDEX(FILES(),i)=MACRO		=DIRECTORY(A2)	
20	i=i+1		=LEFT(RIGHT(NOW(),7),3)	
21	=GOTO(K26)		=ACTIVATE(MACRO)	
22	=ELSE.IF(OR(LEFT(INDEX(FILES(),i),4)="TRAM",LE		=SELECT(TEMPMSC)	
23	=FILE.DELETE(INDEX(FILES(),i))		=FORMULA("TMSC"&A27&".xls")	
24	=ELSE()		=IF(msc_ram=1,(OPEN("iocram.xls")),IF(msc_ram=2,C	
25	i=i+1		=SAVE.AS(TEMPMSC)	
26	=END.IF()		=PROTECT.DOCUMENT?(FALSE,FALSE,,FALSE)	
27	=NEXT()			
28	=SAVE()		**Choose View Options**	
29	=QUIT()		**=DIALOG.BOX(View_Options)**	
30	=RETURN()		=IF(M29=FALSE,GOTO(M3))	
31				
32	**Start MacrAMC.xls**	*This mini-macro defines "Option-apple-*	=IF(View_Options_Choice=6,GOTO(Copy_Complete))	*This choice copies the complete MSC RAM to*
33	=RUN()	*as a hot key to start macro from the*		*TEMPRAM. Copy Complete begins at cell (W1).*
34	=RETURN()	*currently active cell.*	=IF(View_Options_Choice=5)	*User has completed viewing/editing*
35			= ACTIVATE(TEMPMSC)	*with this MSC-RAM*
36			= CLOSE(FALSE)	
37	**Accessories**		= GOTO(M3)	
38	=ALERT("Find and open the file ""MACRORAM.XLM		=END.IF()	
39	=OPEN?()			
40	=ACTIVATE(A14)	**Comments**	=IF(View_Options_Choice=4)	*Allows the user to view MSC-RAM's Indexes, and*
41	=DIRECTORY()	*This subroutine interactively*	= ACTIVATE(TEMPMSC)	*modify TEMPRAM Indexes.*
42	=SELECT(K41)	*has the user input his*	= SELECT(!Indexes)	
43	=COPY()	*working directory, saves it,*	= COPY()	
44	=SELECT(A5)	*and continues to run the*	= ACTIVATE(MACRO)	
45	=PASTE.SPECIAL(3,1,FALSE,FALSE)	*macro.*	= SELECT(!View_Indexes_MSC)	
46	=GOTO(A27)		= PASTE.SPECIAL(3,1,FALSE,FALSE)	
47			= ACTIVATE(TEMPRAM)	
48			= SELECT(!RAM_Indexes)	
49			= COPY()	
50			= ACTIVATE(MACRO)	
51	=INPUT("The name of the file has been changed. P		= SELECT(!View_Indexes_RAM)	
52	=IF(K51=FALSE,RETURN(),GOTO(K53))		= PASTE.SPECIAL(3,1,FALSE,FALSE)	
53			= **DIALOG.BOX(View_Indexes)**	
54	=SELECT(K51)	*Same as above, except this*	= IF(M53=FALSE,GOTO(M29))	
55	=COPY()	*is for the file name.*	= SELECT(!View_Indexes_RAM)	
56	=SELECT(A14)		= COPY()	
57	=PASTE.SPECIAL(3,,FALSE,FALSE)		= ACTIVATE(TEMPRAM)	
58	=GOTO(A27)		= SELECT(!RAM_Indexes)	
59			= PASTE.SPECIAL(3,1,FALSE,FALSE)	
60			= GOTO(M29)	
61			=END.IF()	
62				
63				
64			=ACTIVATE(TEMPRAM)	*1st View/Edit Pass*
65			=IF(View_Options_Choice=1)	*These view/edit sections differ from the basic*
66			= AND(FORMULA("BaseYear Workloads",View_Opt	*RAM edit sections in that the macro must copy*
67			= IF(msc_ram=1,SELECT(!AMCCOM_BaseWork1),I	*from two spreadsheets (TEMPRAM and TEMPM*
68			=ELSE.IF(View_Options_Choice=2)	*to paste to the View MSC Dialog Boxes.*
69			= AND(FORMULA("BaseYear Dollars",View_Option1	
70			= IF(msc_ram=1,SELECT(!AMCCOM_BaseDollar1),I	
71			=ELSE.IF(View_Options_Choice=3)	
72			= AND(FORMULA("ForecastYear Workloads",View_	
73			= IF(msc_ram=1,SELECT(!AMCCOM_ForeWork1),IF	
74			=END.IF()	
75			=COPY()	
76			=ACTIVATE(MACRO)	
77			=SELECT(!Current_RAM951_1)	
78			=PASTE.SPECIAL(3,1,FALSE,FALSE)	
79			=ACTIVATE(TEMPMSC)	
80			=IF(View_Options_Choice=1,SELECT(!BaseWork1),IF	
81			=COPY()	
82			=ACTIVATE(MACRO)	
83			=SELECT(!View_MSC_Data_1)	

	K	L	M	N
84			=PASTE.SPECIAL(3,1,FALSE,FALSE)	
85				
86			**=DIALOG.BOX(MSC_RAM_Edit_1)**	
87			=IF(M86=FALSE,GOTO(M29))	
88				
89			=SELECT(!Current_RAM951_1)	
90			=COPY()	
91			=ACTIVATE(TEMPRAM)	
92			=IF(View_Options_Choice=1)	
93			= IF(msc_ram=1,SELECT(!AMCCOM_BaseWork1),I	
94			=ELSE.IF(View_Options_Choice=2)	
95			= IF(msc_ram=1,SELECT(!AMCCOM_BaseDollar1),	
96			=ELSE.IF(View_Options_Choice=3)	
97			= IF(msc_ram=1,SELECT(!AMCCOM_ForeWork1),IF	
98			=END.IF()	
99			=PASTE.SPECIAL(3,1,FALSE,FALSE)	
100				
101				
102			=IF(View_Options_Choice=1)	*2nd View/Edit Pass*
103			= IF(msc_ram=1,SELECT(!AMCCOM_BaseWork2),I	
104			=ELSE.IF(View_Options_Choice=2)	
105			= IF(msc_ram=1,SELECT(!AMCCOM_BaseDollar2),	
106			=ELSE.IF(View_Options_Choice=3)	
107			= IF(msc_ram=1,SELECT(!AMCCOM_ForeWork2),IF	
108			=END.IF()	
109			=COPY()	
110			=ACTIVATE(MACRO)	
111			=SELECT(!Current_RAM951_2)	
112			=PASTE.SPECIAL(3,1,FALSE,FALSE)	
113				
114			=ACTIVATE(TEMPMSC)	
115			=IF(View_Options_Choice=1,SELECT(!BaseWork2),IF	
116			=COPY()	
117			=ACTIVATE(MACRO)	
118			=SELECT(!View_MSC_Data_2)	
119			=PASTE.SPECIAL(3,1,FALSE,FALSE)	
120				
121			**=DIALOG.BOX(MSC_RAM_Edit_2)**	
122			=IF(M121=FALSE,GOTO(M86))	
123				
124			=SELECT(!Current_RAM951_2)	
125			=COPY()	
126			=ACTIVATE(TEMPRAM)	
127			=IF(View_Options_Choice=1)	
128			= IF(msc_ram=1,SELECT(!AMCCOM_BaseWork2),I	
129			=ELSE.IF(View_Options_Choice=2)	
130			= IF(msc_ram=1,SELECT(!AMCCOM_BaseDollar2),	
131			=ELSE.IF(View_Options_Choice=3)	
132			= IF(msc_ram=1,SELECT(!AMCCOM_ForeWork2),IF	
133			=END.IF()	
134			=PASTE.SPECIAL(3,1,FALSE,FALSE)	
135				
136			=IF(View_Options_Choice=1)	*3rd View/Edit Pass*
137			= IF(msc_ram=1,SELECT(!AMCCOM_BaseWork3),I	
138			=ELSE.IF(View_Options_Choice=2)	
139			= IF(msc_ram=1,SELECT(!AMCCOM_BaseDollar3),	
140			=ELSE.IF(View_Options_Choice=3)	
141			= IF(msc_ram=1,SELECT(!AMCCOM_ForeWork3),IF	
142			=END.IF()	
143			=COPY()	
144			=ACTIVATE(MACRO)	
145			=SELECT(!Current_RAM951_3)	
146			=PASTE.SPECIAL(3,1,FALSE,FALSE)	
147				
148			=ACTIVATE(TEMPMSC)	
149			=IF(View_Options_Choice=1,SELECT(!BaseWork3),IF	
150			=COPY()	
151			=ACTIVATE(MACRO)	
152			=SELECT(!View_MSC_Data_3)	
153			=PASTE.SPECIAL(3,1,FALSE,FALSE)	
154				
155			**=DIALOG.BOX(MSC_RAM_Edit_3)**	
156			=IF(M155=FALSE,GOTO(M121))	
157				
158			=SELECT(!Current_RAM951_3)	
159			=COPY()	
160			=ACTIVATE(TEMPRAM)	
161			=IF(View_Options_Choice=1)	
162			= IF(msc_ram=1,SELECT(!AMCCOM_BaseWork3),I	
163			=ELSE.IF(View_Options_Choice=2)	
164			= IF(msc_ram=1,SELECT(!AMCCOM_BaseDollar3),	
165			=ELSE.IF(View_Options_Choice=3)	
166			= IF(msc_ram=1,SELECT(!AMCCOM_ForeWork3),IF	
167			=END.IF()	
168			=PASTE.SPECIAL(3,1,FALSE,FALSE)	
169				
170			=GOTO(M29)	*Go back to Choose which View Option.*

	O	P	Q	R	S	T	U	V	W
1						**Choose MSC RAM**			[redacted]
2		125	51	419	196	Choose MSC RAM			[redacted]
3	14	10	6	319	160	Which MSC RAM do you want to open?			
4	11						6	msc_ram	
5	12	12	24	154		IOCRAM.XLS			=ECHO(FALSE)
6	12	12	44	154		ATCOMRAM.XLS			=ACTIVATE(TEMPMSC)
7	12	12	64	154		CECOMRAM.XLS			=SELECT(!ForeWork)
8	12	12	84			MICOMRAM.XLS			=COPY()
9	12	12	104			TACOMRAM.XLS			=ACTIVATE(TEMPRAM)
10	12	12	124	154		CBDCORAM.XLS			=IF(msc_ram=1,SELECT(!AMCCOM_ForeWork),IF(msc
11	12	12	144	251	16	None, Return to MACRORAM			=PASTE()
12	1	330	100	78		OK			
13	5	9	171			You may only open one MSC RAM at a time.			=ACTIVATE(TEMPMSC)
14	2	330	129	78		Cancel			
15									=SELECT(!BaseWork)
16						View Options			=COPY()
17		120	46	418	197				=ACTIVATE(TEMPRAM)
18	14	10	6	397	145	Which Option would you like to choose?			=IF(msc_ram=1,SELECT(!AMCCOM_BaseWork),IF(ms
19	11						6	View_Options_Choic	=PASTE()
20	12	13	24			View BaseYear Workloads			
21	12	13	44			View BaseYear Direct dollars			=ACTIVATE(TEMPMSC)
22	12	13	64			View ForecastYear Workloads			=SELECT(!BaseDollar)
23	12	13	84			View Inflation or Productivity Index Factors			=COPY()
24	12	13	104			Done, Return to choose another MSC_RAM			=ACTIVATE(TEMPRAM)
25	12	13	124			Done, Copy Complete MSC_RAM to RAM951			=IF(msc_ram=1,SELECT(!AMCCOM_BaseDollar),IF(ms
26	1	15	170			OK			=PASTE()
27	2	93	170			Cancel			
28									=ACTIVATE(TEMPMSC)
29						View_Indexes			=FILE.CLOSE()
30		150	48	300	154	View MSC Indexes			=ACTIVATE("MACRORAM.XLM")
31	5	10	6			Use TAB to move between Indexes.			
32	5	49	56			Inflation			=GOTO(A42)
33	5	27	86			Productivity			
34	8	127	56	60			0.024	View_Indexes_RAM	
35	8	127	87	60			0.01		
36	208	201	56	60			0.035	View_Indexes_MSC	
37	208	201	87	60			0.01		
38	5	126	32	65		RAM951			
39	5	193	32			CBDCOMRAM			
40	1	121	127			OK			
41	2	201	127			Cancel			
42									
43						View_MSC_1			
44									
45	5	9	83			421010.a			
46	5	9	107			421010.b			
47	5	9	130			421010.c			
48	5	9	154			421010.d			
49	5	9	178			422120.a			
50	5	9	201			422120.b			
51	5	9	225			422120.c			
52	5	9	249			422121.1.a			
53	5	9	272			422121.1.b			
54	5	9	296			422121.1.c			
55	5	9	319			422121.2.a			
56	5	9	343			422121.2.b			
57	5	112	83			# of Short Tons Moved			
58	5	112	107			# of Watercraft Moved			
59	5	112	130			# of Flyaway Aircraft			
60	5	112	154			# of Aircraft Shipped			
61	5	112	178			# of Major Items Shipped/Received			
62	5	112	201			ST Ammo Shipped/Received			
63	5	112	225			ST Ammo Renovation			
64	5	112	249			Requisitions			
65	5	112	272			Density of Pacing Items Managed			
66	5	112	296			# of End Items Managed			
67	5	112	319			# of Active contracts ($25K or less)			
68	5	112	343			# of Active contracts (over $25K)			
69	8	423	83	100			25400		
70	8	423	107	100			0	Current_RAM951_1	
71	8	423	130	100			0		
72	8	423	154	100			0		
73	8	423	178	100			56548		
74	8	423	201	100			0		
75	8	423	225	100			0		
76	8	423	249	100			55458		
77	8	423	272	100			5458		
78	8	423	296	100			2325		
79	8	423	319	100			2145		
80	8	423	343	100			2125		
81	208	529	83	100					
82	208	529	107	100				View_MSC_Data_1	
83	208	529	130	100					

	O	P	Q	R	S	T	U	V	W
84	208	529	154	100					
85	208	529	178	100					
86	208	529	201	100					
87	208	529	225	100					
88	208	529	249	100					
89	208	529	272	100					
90	208	529	296	100					
91	208	529	319	100					
92	208	529	343	100					
93	5	99	9			Enter			
94	5	192	25			CBDCOM			
95	5	154	25			from			
96	5	147	9			ForecastYear Workloads			
97	1	448	377	64		OK			
98	2	535	378	64		Cancel			
99	5	84	53			Use TAB to move between Program Elements			
100	5	447	63			RAM951			
101	5	532	63			CBDCOMRAM			
102	5	506	16			Page 1 of 3			
103									
104									
105						View_MSC_2			
106									
107	5	9	83			422121.3.a			
108	5	9	107			422121.3.b			
109	5	9	130			423005			
110	5	9	154			423012.a			
111	5	9	178			423012.b			
112	5	9	201			423611			
113	5	9	225			423612.a			
114	5	9	249			423612.b			
115	5	9	272			423806			
116	5	9	296			423829.a			
117	5	9	319			423829.b			
118	5	9	343			423892			
119	5	112	83			# of Active Major Items Fielded			
120	5	112	107			# of Major Items Provisioned/New Flds			
121	5	112	130			# of Disposal Actions			
122	5	112	154			A Value (Log Management)			
123	5	112	178			# of Eaches Demil'ed			
124	5	112	201			# Auth Pop Incl Act Duty Mil/Contract			
125	5	112	225			# Auth Pop Incl Act Duty Mil/Contract			
126	5	112	249			# MIPS Used			
127	5	112	272			Acquisition Support to Project Managers			
128	5	112	296			# of Project Manager Offices			
129	5	112	319			# of Major Items Supported			
130	5	112	343			# Military Population Supported			
131	8	423	83	100			22232	Current_RAM951_2	
132	8	423	107	100			0		
133	8	423	130	100			0		
134	8	423	154	100			0		
135	8	423	178	100			54555		
136	8	423	201	100			5824		
137	8	423	225	100			4521		
138	8	423	249	100			225		
139	8	423	272	100			0		
140	8	423	296	100			0		
141	8	423	319	100			0		
142	8	423	343	100			555		
143	208	529	83	100				View_MSC_Data_2	
144	208	529	107	100					
145	208	529	130	100					
146	208	529	154	100					
147	208	529	178	100					
148	208	529	201	100					
149	208	529	225	100					
150	208	529	249	100					
151	208	529	272	100					
152	208	529	296	100					
153	208	529	319	100					
154	208	529	343	100					
155	5	99	9			Enter			
156	5	192	25			CBDCOM			
157	5	154	25			from			
158	5	147	9			ForecastYear Workloads			
159	1	448	377	64		OK			
160	2	535	378	64		Cancel			
161	5	84	53			Use TAB to move between Program Elements			
162	5	447	63			RAM951			
163	5	532	63			CBDCOMRAM			
164	5	506	16			Page 2 of 3			
165									
166						View_MSC_3			
167									
168	5	9	83			424041.a			
169	5	9	107			424041.b			
170	5	9	130			424041.c			

	O	P	Q	R	S	T	U	V	W
171	5	9	154			unused 1			
172	5	9	178			unused 2			
173	5	9	201			unused 3			
174	5	9	225			unused 4			
175	5	9	249			unused 5			
176	5	9	272			unused 6			
177	5	9	296			unused 7			
178	5	9	319			unused 8			
179	5	9	343			unused 9			
180	5	112	83			ST Ammo Shipped/Received			
181	5	112	107			ST Ammo Stored			
182	5	112	130			ST Ammo Renovation			
183	5	112	154						
184	5	112	178						
185	5	112	201						
186	5	112	225						
187	5	112	249						
188	5	112	272						
189	5	112	296						
190	5	112	319						
191	5	112	343						
192	8	423	83	100			0	Current_RAM951_3	
193	8	423	107	100			0		
194	8	423	130	100			0		
195	8	423	154	100			0		
196	8	423	178	100			0		
197	8	423	201	100			0		
198	8	423	225	100			0		
199	8	423	249	100			0		
200	8	423	272	100			0		
201	8	423	296	100			0		
202	8	423	319	100			0		
203	8	423	343	100			0		
204	208	529	83	100				View_MSC_Data_3	
205	208	529	107	100					
206	208	529	130	100					
207	208	529	154	100					
208	208	529	178	100					
209	208	529	201	100					
210	208	529	225	100					
211	208	529	249	100					
212	208	529	272	100					
213	208	529	296	100					
214	208	529	319	100					
215	208	529	343	100					
216	5	99	9			Enter			
217	5	192	25			CBDCOM			
218	5	154	25			from			
219	5	147	9			ForecastYear Workloads			
220	1	448	377	64		OK			
221	2	535	378	64		Cancel			
222	5	84	53			Use TAB to move between Program Elements			
223	5	447	63			RAM951			
224	5	532	63			CBDCOMRAM			
225	5	506	16			Page 3 of 3			
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